

# JVC

## SERVICE MANUAL

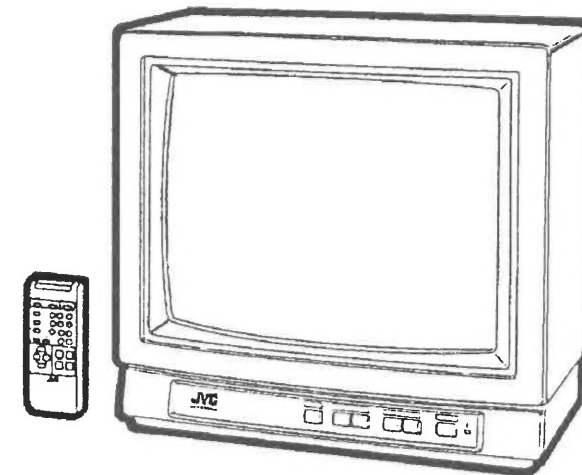
COLOR TV

C-13CL4<sub>(US&CA)</sub>  
C-13WL4<sub>(US&CA)</sub>

BASIC CHASSIS

GY HOT

FI



### JVC SERVICE & ENGINEERING COMPANY OF AMERICA DIVISION OF US JVC CORP.

Head office : 107 Little Falls Road, Fairfield, New Jersey 07004 (201)808-9279  
(East Coast)  
Midwest : 705 Enterprise St. Aurora, Illinois 60504 (708)851-7855  
West Coast : 5665 Corporate Avenue, Cypress, California 90630 (714)229-8011  
Southeast : 1500 Lakes Parkway, Lawrenceville, Georgia 30243 (404)339-2522  
Hawaii : 2969 Mapunapuna Place, Honolulu, Hawaii 96819 (808)833-5828

### JVC CANADA INC.

Head office : 21 Finchdene Square Scarborough, Ontario M1X 1A7 (416)293-1311  
Vancouver : 13040 Worster Court Richmond B.C. V6V 2B3 (604)270-1311

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# JVC

# SPECIFICATIONS

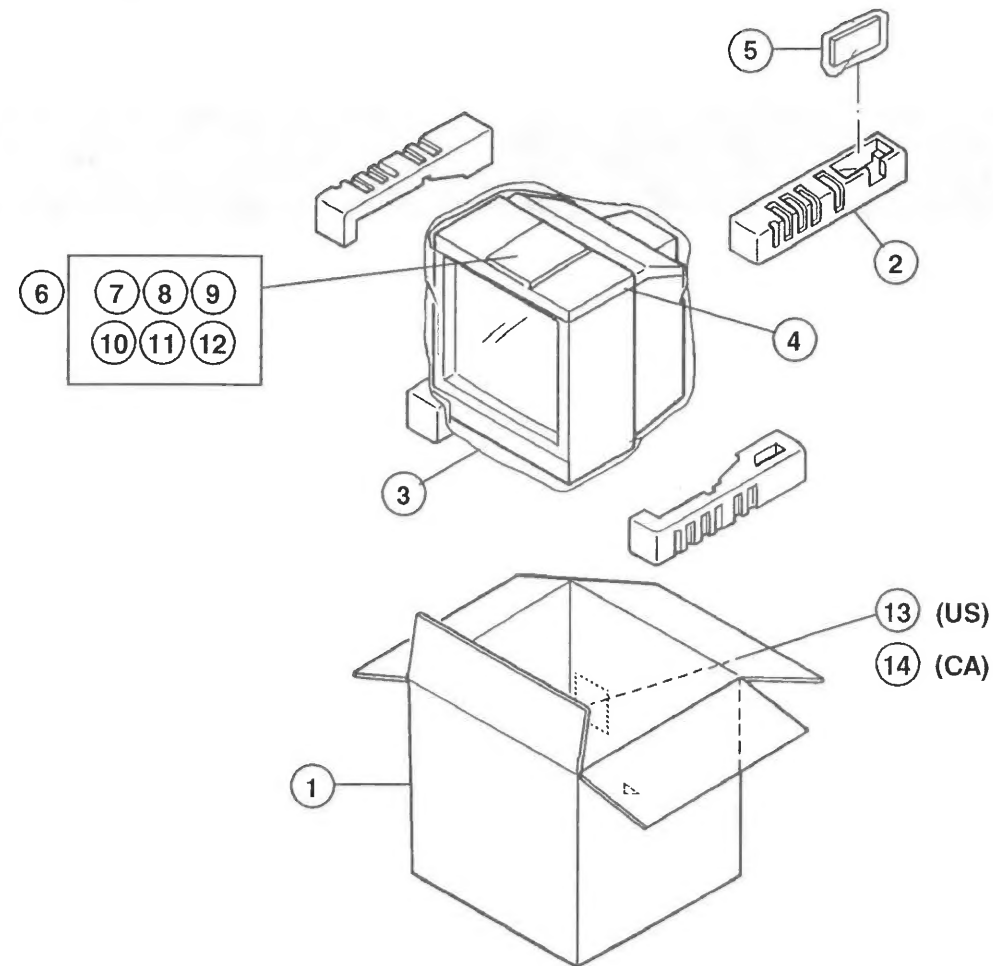
Item	Content
Dimensions (W×H×D)	14-5/8"×12-5/8"×14-3/8" / 37.0cm×31.9cm×36.5cm
Weight	20.9lbs / 9.5kg
GND	Only LIVE GND
TV System and Color system	
TV RF System	CCIR (M)
Color System	NTSC
TV Receiving Channels and Frequency	
VL Band	(02 ~ 06) 54MHz ~ 88MHz
VH Band	(07 ~ 13) 174MHz ~ 216MHz
UHF Band	(14 ~ 69) 470MHz ~ 806MHz
CATV Receiving Channels and Frequency (Quartz Synthesizer system)	
Low Band	(02 ~ 06,A-8) by (02 ~ 06&01)
High Band	(07 ~ 13) by (07 ~ 13)
Mid Band	(A ~ 1) by (14 ~ 22)
Super Band	(J ~ W) by (23 ~ 36)
Hyper Band	(W + 1 ~ W + 28) by (37 ~ 64)
ULTRA Band	(W + 29 ~ W + 84) by (65 ~ 125)
Sub Mid Band	(A8,A4 ~ A1) by (01,96 ~ 99)
TV/CATV Total Channel	180 Channels
Intermediate Frequency	
Video IF Carrier	45.75MHz
Sound IF Carrier	41.25MHz (4.5MHz)
Color Sub Carrier	3.58MHz
Antenna Input Impedance	75Ω (VHF/UHF) Terminal,F-Type Connector
Power Input	120V AC,60Hz
Power Consumption	80W(US)
Input Current	1.1A(CA)
Picture Tube	13"(33cm) In-Line Type Tint Tube
Viewable Picture Size (W×H)	11-1/8"×8-5/16" / 28.1cm×21.1cm
High Voltage	24.0kV ± 1kV (at zero beam current)
Speaker	3-3/16"(8cm) Round Type, 8Ω
Audio Power Output	1.2W
Tube	1
IC	16 (In TV), 1 (In REMOCON)
Transistor	27 (In TV), 2 (In REMOCON)
Remote Control Unit	RM-C428 (C-13CL4) RM-C428W (C-13WL4)

Design & specification subject to change without notice.

# FEATURES

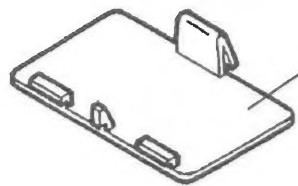
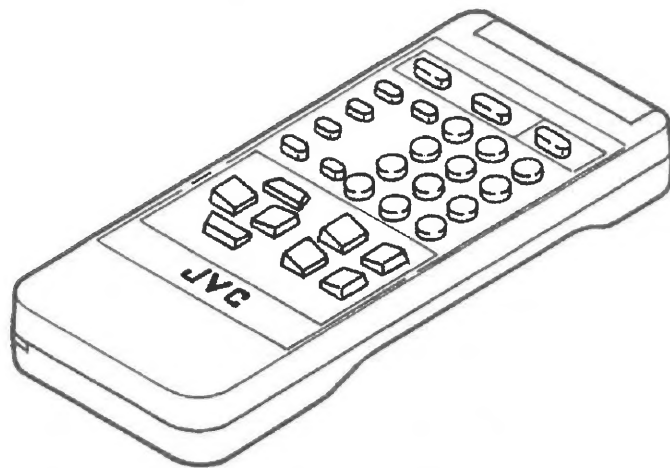
- New chassis design enables use of a single board with simplified circuitry.
- Provided with miniature tuner ( TV/CATV ).
- PLL synthesizer system TV/CATV totaling 180 channels.
- Deletion of user VR by master command and increased features possible simultaneously.
- Multifunctional remote control permits picture adjustment.
- Adoption of the CHANNEL GUARD function prevents the specific channels from being selected, unless the "ID number" is key in.
- Adoption of the AV STATUS function that can store 2 variations for preset picture adjustment, to change the picture tone to your preference.
- Adoption of the HOME SITTER function enable to be turned on and off automatically at present times everyday.
- ON/SLEEP TIMER for setting in real time.
- With 75Ω V/U in common ( F-Type ) ANT Terminal.

# PACKING



# PACKING PARTS LIST

△ Ref.No.	Part No.	Part Name	Description	Local
1	CP10974-037-H	PACKING CASE	(C-13CL4(US))	
1	CP10974-038-H	PACKING CASE	(C-13WL4(US))	
1	CP10974-039-H	PACKING CASE	(C-13CL4(CA))	
1	CP10974-040-H	PACKING CASE	(C-13WL4(CA))	
2	CP11053-00A-H	CUSHION ASSY	4pcs in 1set	
3	CP30697-003-H	POLY BAG		
4	CP30698-001-H	POLY COVER		
5	RM-C428-01-KH	REMOCON UNIT	(C-13CL4)	
5	RM-C428W-01-KH	REMOCON UNIT	(C-13WL4)	
6	QPGA025-04005H	POLY BAG		
7	C13,20L4UIBA-H	INST BOOK	(US)	
7	C13,20L4CIBA-H	INST BOOK	(CA)	
8	BT-20071A-H	SVC CENTER LIST	(CA ONLY)	
9	BT-20025K-H	WARRANTY CARD	(CA ONLY)	
10	CM34994-00A-T2	ROD ANTENNA		
11	CE42024-00BJ1	MATCHING BOX		
12	BT-51006-1	REGISTRATION CARD	(US ONLY)	
13	CP30702-001	REC KEEPING CARD	(US ONLY)	
14	CM47385-00A	POS,SERIAL LABEL	(CA ONLY)	

REMOTE CONTROL UNIT (RM-C428-01-KH)  
(RM-C428W-01-KH)BATTERY COVER  
BAH11M201A(RM-C428-01-KH)  
BAH11M248A(RM-C428W-01-KH)

## SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (▲) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may create shock, fire, or other hazards.
4. **Use isolation transformer when hot chassis.**  
The chassis and any sub-chassis contained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
5. **Don't short between the LIVE side ground and NEUTRAL side grounding or EARTH side ground when repairing.**  
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE (⊥) side GND, the NEUTRAL (≡) side GND and EARTH (⊕) side GND. Don't short between the LIVE side GND and NEUTRAL side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and NEUTRAL side GND or EARTH side GND at the same time.  
If above note will not be kept, a fuse or any parts will be broken.
6. If any repair has been made to the chassis, it is recommended that the B<sub>1</sub> setting should be checked or adjusted (See ADJUSTMENT OF B<sub>1</sub> POWER SUPPLY).
7. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
8. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10k $\Omega$  2W resistor to the anode button.
9. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
10. **Isolation Check**  
**(Safety for Electrical Shock Hazard)**  
After re-assembling the product, always perform an isolation check

on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**

The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1100V AC (r.m.s.) for a period of one second.

(. . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)

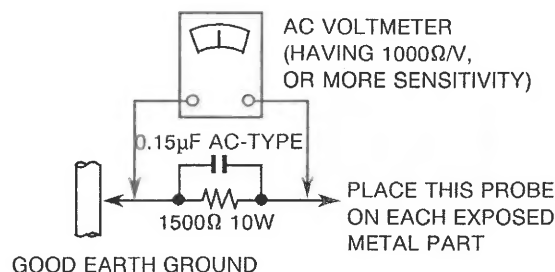
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.) Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

• **Alternate Check Method**

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500 $\Omega$  10W resistor paralleled by a 0.15 $\mu$ F AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).

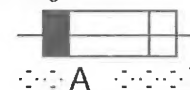
11. **High voltage hold down circuit check.**

After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.

See item "How to check the high voltage hold down circuit".

■ **ONLY CANADA**

This mark shows a fast operating fuse, the letters indicated below show the rating.





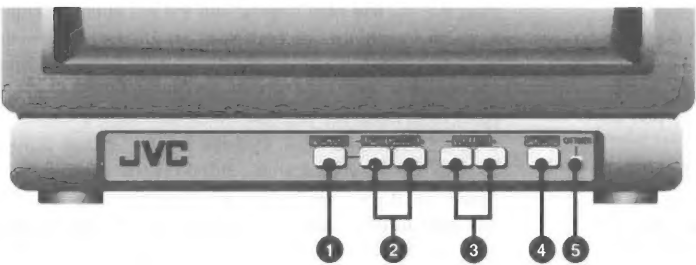
OPERATING INSTRUCTIONS

■ The operating instructions are the same as for C-20BL4(US), C-20CL4(US&CA), C-20WL4(US) (No.50792). Therefore, please refer to the C-20BL4(US), C-20CL4(US&CA), C-20WL4(US) (No.50792) SERVICE MANUAL for detailed instructions.

NOTE : The on-screen display in CANADA model is shown in English only, no Spanish text is available.

Locations of TV Buttons and Parts

FRONT PANEL



**How to use the FUNCTION button:**

- Press this button to display a list of functions. While the list is being displayed, press the button again to select the desired function; then change the level or setting with LEVEL/CHANNEL (-/+).
- Other buttons may be used by referring to the respective pages of this user guide for their description.

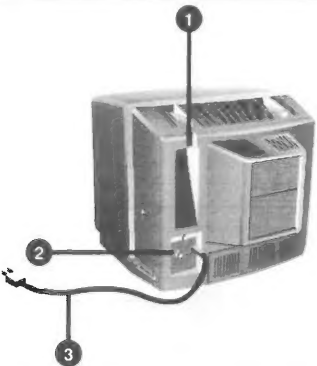
**Note:**

- Illustrations for front panels and rear panels used in this user guide are of C-13CL4/ C-13WL4. The panels of the other models are the same in layout and shape, but different in size.

① FUNCTION button	p. 6
② LEVEL/CHANNEL (-/+) buttons	p. 11
③ VOLUME (-/+) buttons	p. 12

④ POWER button	p. 8
⑤ POWER/ON TIMER lamp	p. 8, 19, 20

REAR PANEL



① Antenna socket	p. 7
② Antenna terminal	p. 7
③ Power cord	p. 7

△ Symbol No.	Part No.	Part Name	Description	Local
I C				
IC1702	MN1280-K	I.C.(DIGI-MOS)		
IC1703	HC-337M	IR DETECT UNIT		
IC1704	MN12C261D	I.C.(MEMORY-OTH)		
IC1851	LC7458B-03	I.C.		
IC1852	LA7945N	I.C.		
IC1853	MN1280-Q	I.C.(DIGI-MOS)		
IC1854	AN78L05-Y	I.C.		
△ IC1901	STR30130	I.C.(H)		
O T H E R S				
△	CE42071-001J1	CRT SOCKET		
CF1161	SFSH4.5MCB	CERAMIC FILTER		
CF1201	CE41505-001	CERAMIC FILTER		
CF1501	CSB503F30-T2	C RESONATOR		
CF1701	CST4.00MGW-Z	CERAMIC RESONATO		
△ F1901	QMF66U1-5R0S	FUSE	5.0A	
△ F1902	QMF53U1-1R25S	FUSE	1.25A	
△ LF1901	CE41506-00BJ1	LINE FILTER		
△ RY1901	CESK023-002	RELAY		
S1251	QSL6A13-C01	LEVER SWITCH	SERVICE SW	
S1401	QSL6A13-C01	LEVER SWITCH	V. CENTER	
S1701	QSP1A11-C18Z	PUSH SWITCH	FUNCTION	
S1702	QSP1A11-C18Z	PUSH SWITCH	CH/LEVEL UP	
S1703	QSP1A11-C18Z	PUSH SWITCH	CH/LEVEL DOWN	
S1704	QSP1A11-C18Z	PUSH SWITCH	POWER	
S1705	QSP1A11-C18Z	PUSH SWITCH	VOL △	
S1706	QSP1A11-C18Z	PUSH SWITCH	VOL ▽	
S1710	QSL6A13-C01	LEVER SWITCH	VSM SW	
SF1101	CE42377-201	SAW FILTER		
SF1102	CE41031-202	SAW FILTER		
△ TH1901	CEKP001-001J1	P.THERMISTOR		
△ TU1701	CEEK255-A03	TUNER		
X1301	CE40668-001J1	CRYSTAL		
X1851	CSA12.0MT	CER.RESONATOR		

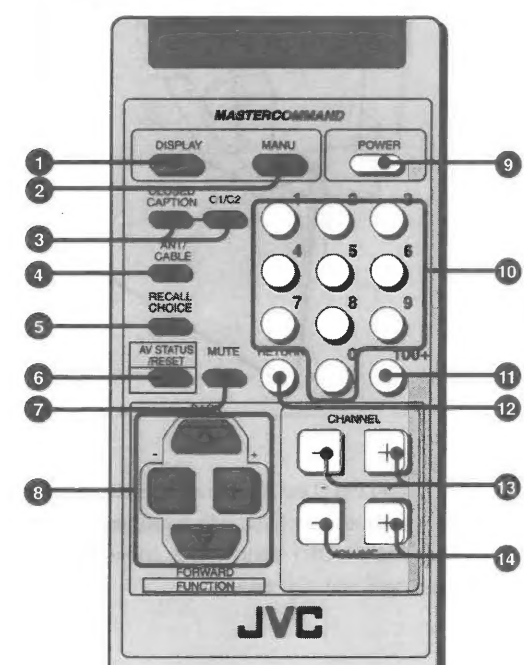
MAIN PW BOARD ASS'Y ( SGY1701A(H2) ) [CA]

Regarding the parts list for the main PW board ass'y [ SGY1701A(H2) ] of the model for canada, only the different parts from those of the model [ SGY1201A(H2) ] are described. For further details regarding the other parts, refer to the parts list of the model [ SGY1201A(H2) ] described on page 18 through page 21.

△	SYMBOL No.	PARTS No.		PARTS NAME	REMARKS
		America Model(US) SGY1201A(H2)	Canada Model(CA) SGY1701A(H2)		
	D1732	1SS133-T2	—	SI. DIODE	

△ Symbol No.	Part No.	Part Name	Description	Local
D I O D E				
D1321-26	1SS133-T2	SI.DIODE		
△ D1421	1SR35-100A-T2	SI.DIODE		
D1425	RD75E(B)-T5	ZENER DIODE		
D1501	MA4068(M)-T2	ZENER DIODE		
△ D1502	MA4068(N)C1-T2	ZENER DIODE		
△ D1503	1SS81-T5	SI.DIODE		
△ D1504	1SS81-T2	SI.DIODE		
D1506	MA4075(M)-T2	ZENER DIODE		
△ D1532	RGP10J-T3	SI.DIODE		
△ D1533	RGP10J-T3	SI.DIODE		
△ D1534	RGP10J-T3	SI.DIODE		
△ D1536	RH1S-T3	SI.DIODE		
D1537	1SS81-T2	SI.DIODE		
D1540	1SS81-T5	SI.DIODE		
D1631-32	1SS133-T2	SI.DIODE		
D1671	1SS133-T2	SI.DIODE		
D1721-25	1SS133-T2	SI.DIODE		
D1730	1SS133-T2	SI.DIODE		
D1732-33	1SS133-T2	SI.DIODE		
D1738	1SS133-T2	SI.DIODE		
D1761-62	1SS133-T2	SI.DIODE		
D1763	SEL1210S	L.E.D.(RED)		
D1764	1SS133-T2	SI.DIODE		
D1772-74	1SS133-T2	SI.DIODE		
D1791-92	1SS146-T2	SI.DIODE		
D1793	1S1887A-T3	SI.DIODE		
D1794	MA4062(H)-T2	ZENER DIODE		
D1795-96	1SS133-T2	SI.DIODE		
△ D1901	1S1887A	SI.DIODE		
△ D1902	1S1887A	SI.DIODE		
△ D1903	1S1887A	SI.DIODE		
△ D1904	1S1887A	SI.DIODE		
△ D1905	1S1887A-T3	SI.DIODE		
T R A N S I S T O R				
Q1101	2SC4502-T	SI.TRANSISTOR		
Q1111	2SC4502-T	SI.TRANSISTOR		
Q1201-02	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1221	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1241-42	2SA933S(QR)-T	SI.TRANSISTOR		
Q1251	2SA933S(QR)-T	SI.TRANSISTOR		
Q1252	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1253	2SA933S(QR)-T	SI.TRANSISTOR		
Q1255	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1371-73	2SC3271(NP)	SI.TRANSISTOR		
Q1401	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1423	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1521	2SC2482(C1)-T	SI.TRANSISTOR		
△ Q1522	2SD1554-C1	SI.TRANSISTOR	H.OUT	
Q1636	2SA933S(QR)-T	SI.TRANSISTOR		
Q1637	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1751-52	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1761	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1781-82	2SA933S(QR)-T	SI.TRANSISTOR		
Q1791	2SC2073	SI.TRANSISTOR		
Q1792	2SC3271(NP)	SI.TRANSISTOR		
I C				
IC1001	AN78L05-Y	I.C.		
IC1101	TA8725AN	I.C.(MONO-ANA)		
IC1121	AN78L09	I.C.		
IC1201	AN78L09	I.C.		
△ IC1421	LA7837	I.C.(MONO-ANA)		
△ IC1422	AN78L12-Y	I.C.		
△ IC1621	AN5265	I.C.		
IC1701	MN1872013JGU4	I.C.		

# Locations of Remote Control Buttons



1	DISPLAY button	p.21
2	MENU button	p.5
3	CLOSED CAPTION buttons	p.24
4	ANT/CABLE button	p.11
5	RECALL CHOICE button	p.16
6	AV STATUS/RESET button	p.14
7	MUTE button	p.13
8	FUNCTION (▼▲ - +) buttons	p.13
9	POWER button	p.8
10	Number keys	p.11
11	100+ button	p.11
12	RETURN button	p.15
13	CHANNEL (-/+) buttons	p.11
14	VOLUME (-/+) buttons	p.12

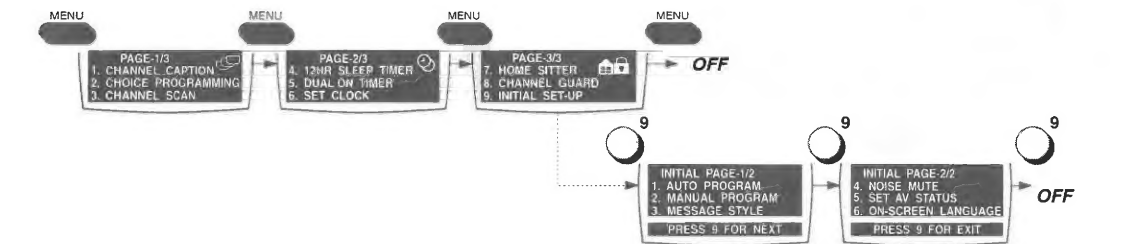
### MENU Selection

Most of the TV's functions can be selected with the remote control unit.

- Press MENU. The function list will appear.
- Press the corresponding number key to select a function.
- A function can be set on the screen.

**Note :**

- When "9. INITIAL SET-UP" is selected, another function list will be displayed. Use the number keys to select a function.



SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING REAR COVER

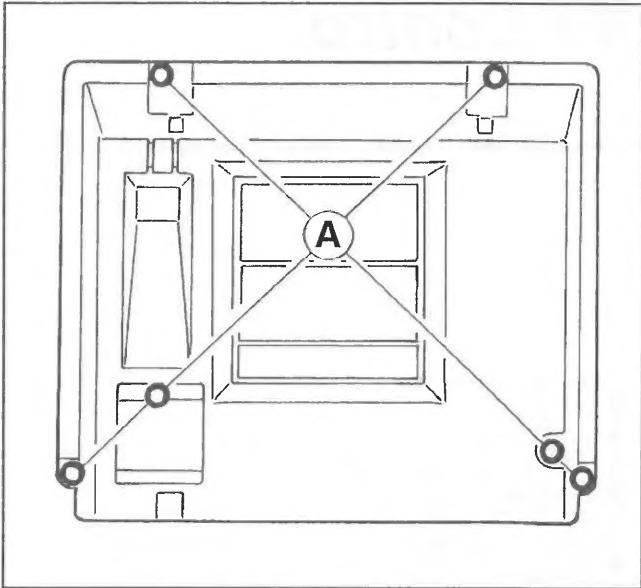


Fig. A

1. Unplug the power supply cord and remove the six screws  
A shown in Fig.A
- \* when reinstalling the rear cover, carefully push it inward after inserting the main PW board into the rear cover groove.

SETTING UP CHASSIS FOR CHECK/REPAIR

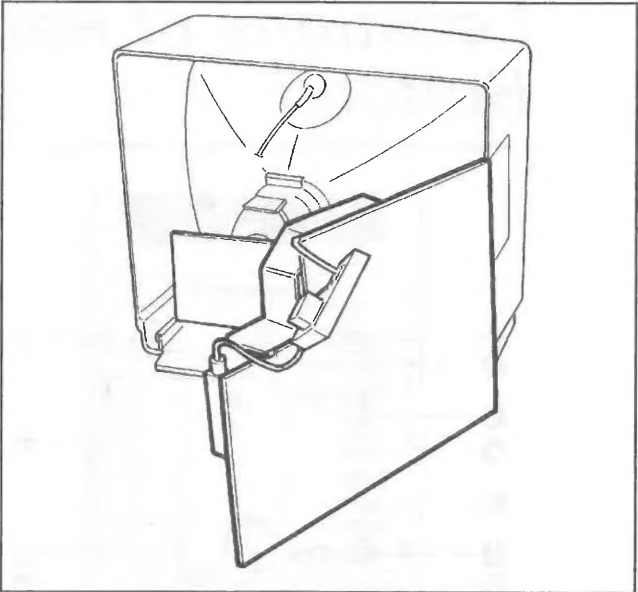


Fig. C

1. As shown in Fig.C, set the removed chassis upright.
- \* When conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT socket board and the chassis..

REMOVING MAIN PW BOARD

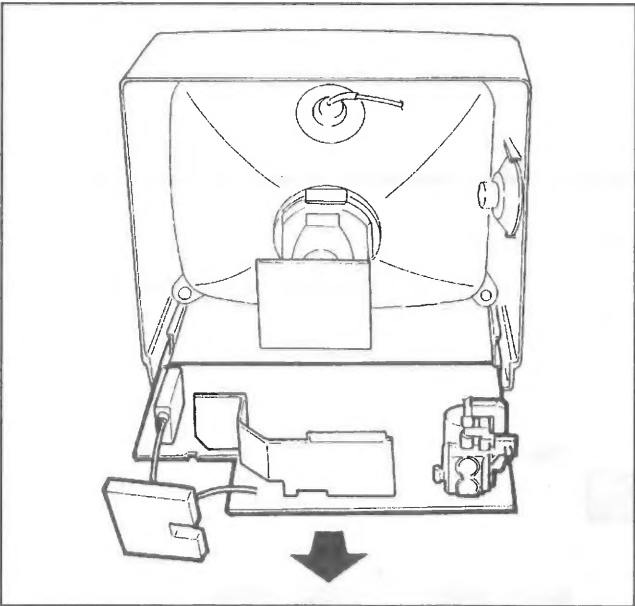


Fig. B

1. Withdraw the PW board backward along the rail.(Fig.B)
- \* When Conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT socket board and the chassis.

WIRE CLAMPING AND CABLE TIES

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together.
- Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

Symbol No.	Part No.	Part Name	Description	Local
CAPACITOR				
C1523	QFN32DK-103J1	MM CAP.	0.01 $\mu$ F 200V	K
△ C1524	QFZ0117-6301S	MPP CAP.	6300 p F 1600V	
△ C1526	QFZ0119-474S	MPP CAP.	0.47 $\mu$ F 200V $\pm$ 3%	
△ C1532	QETC1EM-477ZJ5	E CAP.	470 $\mu$ F 25V	M
△ C1533	QETB1VM-228J3	E CAP.	2200 $\mu$ F 35V	M
△ C1535	QETC1EM-227ZJ5	E CAP.	220 $\mu$ F 25V	M
△ C1536	QETB2EM-106J5	E CAP.	10 $\mu$ F 250V	M
C1540	QFV71HJ-104MZ	TF CAP.	0.1 $\mu$ F 50V	J
C1542	QFN32DK-332J1	M CAP.	3300 p F 200V	K
C1545	QFN32AK-224J1	M CAP.	0.22 $\mu$ F 100V	K
C1623	QFN31HJ-472ZJ1	M CAP.	4700 p F 50V	J
C1628	QFLC1HJ-473MZ	M CAP.	0.047 $\mu$ F 50V	J
C1671	QFN31HJ-102ZJ1	M CAP.	1000 p F 50V	J
C1703	QFLC1HJ-333MZ	M CAP.	0.033 $\mu$ F 50V	J
C1704	QEKC1HM-104GMZ	E CAP.	0.1 $\mu$ F 50V	M
C1736	CECN003-101	NET CAP.	100 p F	
C1758	QFN31HK-562ZJ1	M CAP.	5600 p F 50V	K
△ C1791	QETC2EM-475ZJ5	E CAP.	4.7 $\mu$ F 250V	M
△ C1792	QETB2CM-336J5	E CAP.	33 $\mu$ F 160V	M
C1855	QFN31HJ-332ZJ1	M CAP.	3300 p F 50V	J
C1858	QEN61HM-105ZJ3	BP E CAP.	1 $\mu$ F 50V	M
C1859	QFLC1HJ-153MZ	M CAP.	0.015 $\mu$ F 50V	J
C1860	QFN31HJ-332ZJ1	M CAP.	3300 p F 50V	J
C1861	QCT25CH-220ZJ5	C CAP.	22 p F 50V	J
C1862	QCT25CH-390ZJ5	C CAP.	39 p F 50V	J
C1867	QFLC1HJ-103MZ	M CAP.	0.01 $\mu$ F 50V	J
C1868	QFN31HJ-332ZJ1	M CAP.	3300 p F 50V	J
C1869	QCT25CH-101ZJ5	C CAP.	100 p F 50V	J
C1872	QCT25CH-100ZJ5	C CAP.	10 p F 50V	J
△ C1901	QCZ9057-472M	C CAP.	4700 p FAC125V	
△ C1902	QCZ9057-472M	C CAP.	4700 p FAC125V	
△ C1903	QCZ9057-472M	C CAP.	4700 p FAC125V	
△ C1904	QEZ0169-337M	E CAP.	330 $\mu$ F 200V	
C1905	QETC2CM-106ZJ5	E CAP.	10 $\mu$ F 160V	M
△ C1906	QFZ9036-104M	MF CAP.	0.1 $\mu$ FAC250V	
△ C1907	QFZ9036-473M	MF CAP.	0.047 $\mu$ FAC250V	
△ C1908	QETB2CM-107J5	E CAP.	100 $\mu$ F 160V	M
TRANSFORMER				
T1132	CE40123-400J1	AFC TRANSF		
T1133	CELT001-208J1	CW TRANSF		
T1152	CELT003-104J1	SIF TRANSF		
T1521	CEX40133-001J1	H.DRIVE TRANSF.		
COIL				
L1102	CELP043-R68	PEAKING COIL	0.68 $\mu$ H	
L1112	CELP043-R47	PEAKING COIL	0.47 $\mu$ H	
L1121	CELP055-680Z	PEAKING COIL	68 $\mu$ H	
L1131	CELP041-R82J5	PEAKING COIL	0.82 $\mu$ H	
L1151	CELP055-680Z	PEAKING COIL	68 $\mu$ H	
L1161	CELP042-1R0J5	PEAKING COIL	1.0 $\mu$ H	
L1162	CELP055-220Z	PEAKING COIL	22 $\mu$ H	
L1201	CELP055-150Z	PEAKING COIL	15 $\mu$ H	
L1241	CELP055-820Z	PEAKING COIL	82 $\mu$ H	
L1371	CELP055-181Z	PEAKING COIL	180 $\mu$ H	
△ L1372	CELC901-046J6	HEATER CHOKE		
L1524-25	CE41169-002J2	BEADS CORE		
L1671	CELP055-2R2Z	PEAKING COIL	2.2 $\mu$ H	
L1751	CELP055-180Z	PEAKING COIL	18 $\mu$ H	
L1852	CELP058-6R8Z	PEAKING COIL	6.8 $\mu$ H	
DIODE				
D1001	MA4330(M)-T2	ZENER DIODE		
D1133-34	1SS133-T2	SI.DIODE		
D1204	1SS133-T2	SI.DIODE		
D1222-23	1SS133-T2	SI.DIODE		
D1251	MA4150(M)-T2	ZENER DIODE		
D1253	1SS133	SI.DIODE		

## PRINTED WIRING BOARD PARTS LIST

Regarding the main PW Board Ass'y [ SGY1701A(H2) ] for the model for canada, refer to page 21.

## MAIN PW BOARD ASS'Y ( SGY1201A(H2) ) [US]

△ Symbol	No.	Part No.	Part Name	Description	Local
VARIABLE RESISTOR					
	R1135	QVPE611-502HZ	V R(NOISE)	5k Ω B	
	R1316	QVPE611-103HZ	V R(COLOR SYNC.)	10k Ω B	
	R1374	QVPE805-502H	V R(B CUT OFF)	5k Ω B	
	R1375	QVPE805-502H	V R(G CUT OFF)	5k Ω B	
	R1376	QVPE805-502H	V R(R CUT OFF)	5k Ω B	
	R1381	QVPE805-201H	V R(G DRIVE)	200 Ω B	
	R1382	QVPE805-201H	V R(R DRIVE)	200 Ω B	
	R1423	QVPE611-503HZ	V R(V.HEIGHT)	50k Ω B	
	R1426	QVPE611-503HZ	V R(V.LIN)	50k Ω B	
RESISTOR					
	R1251	QRD123J-391SX	C R	390 Ω 1/2W J	
	R1355	QRV141F-1502AY	MF R	15k Ω 1/4W F	
	R1356	QRD161J-123Y	C R	12k Ω 1/6W J	
	R1383-85	QRG029J-153A	OM R	15k Ω 2W J	
	R1424	QRX019J-2R2S	MF R	2.2 Ω 1W J	
△	R1508	QRD129J-100S	C R	10 Ω 1/2W J	
△	R1525	QRG039J-822A	OM R	8.2k Ω 3W J	
	R1526-27	QRG039J-153A	OM R	15k Ω 3W J	
	R1529	QRG029J-183A	OM R	18k Ω 2W J	
	R1530	QRG039J-153A	OM R	15k Ω 3W J	
△	R1532	QRD129J-5R6S	C R	5.6 Ω 1/2W J	
△	R1533	QRX039J-3R3A	MF R	3.3 Ω 3W J	
△	R1534	QRX039J-2R2A	MF R	2.2 Ω 3W J	
△	R1536	QRD149J-1R0S	C R	1.0 Ω 1/4W J	
△	R1539	QRG039J-561A	OM R	560 Ω 3W J	
	R1541	QRD123J-274SX	C R	270k Ω 1/2W J	
	R1542	QRD123J-224SX	C R	220k Ω 1/2W J	
	R1791	QRG019J-471S	OM R	470 Ω 1W J	
	R1792	QRG029J-561A	OM R	560 Ω 2W J	
△	R1793	QRG05AJ-152	OM R	1.5k Ω 5W J	
△	R1794	QRG029J-182A	OM R	1.8k Ω 2W J	
△	R1795	QRG029J-562A	OM R	5.6k Ω 2W J	
△	R1796	QRD121J-474SY	C R	470k Ω 1/2W J	
	R1851	QRV141F-1502AY	MF R	15k Ω 1/4W F	
△	R1901	QRF074K-1R8	UNF R	1.8 Ω 7W K	
△	R1903	QRX039J-2R7A	MF R	2.7 Ω 3W J	
△	R1906	QRF204J-221	UNF R	220 Ω 20W J	
△	RB1507	QRZ0101-014	R BLOCK		
CAPACITOR					
	C1133	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V J	
	C1134	QCT25CH-560ZJ5	C CAP.	56 p F 50V J	
	C1135	QCT32CH-121Y	C CAP.	120 p F 160V H	
	C1138	QCT25RH-270ZJ6	C CAP.	27 p F 50V J	
	C1157	QEN61CM-106ZJ3	BP E CAP.	10 μ F 16V M	
	C1204	QEN61HM-105ZJ3	BP E CAP.	1 μ F 50V M	
	C1305	QFLC1HK-223MZ	M CAP.	0.022 μ F 50V K	
	C1317	QFLC1HK-103MZ	M CAP.	0.01 μ F 50V K	
	C1377	QCZ0121-102M	C CAP.	1000 p F 3000V P	
	C1380	CECN003-101	NET CAP.	100 p F	
	C1401	QEN61HM-105ZJ3	BP E CAP.	1 μ F 50V M	
	C1422	QEE61VK-105BZ	TAN. CAP.	1 μ F 35V K	
	C1424	QFV71HJ-474MZ	TF CAP.	0.47 μ F 50V J	
△	C1426	QEHC1VM-107MZ	E CAP.	100 μ F 35V M	
	C1428	QFLC2AK-333MZ	M CAP.	0.033 μ F 100V K	
△	C1430	QETC1VM-477ZJ3	E CAP.	470 μ F 35V M	
	C1431	QFN31HK-332ZJ1	M CAP.	3300 p F 50V K	
	C1433	QFLC1HK-103MZ	M CAP.	0.01 μ F 50V K	
△	C1508	QETC1VM-107ZJ5	E CAP.	100 μ F 35V M	

## SERVICE ADJUSTMENTS

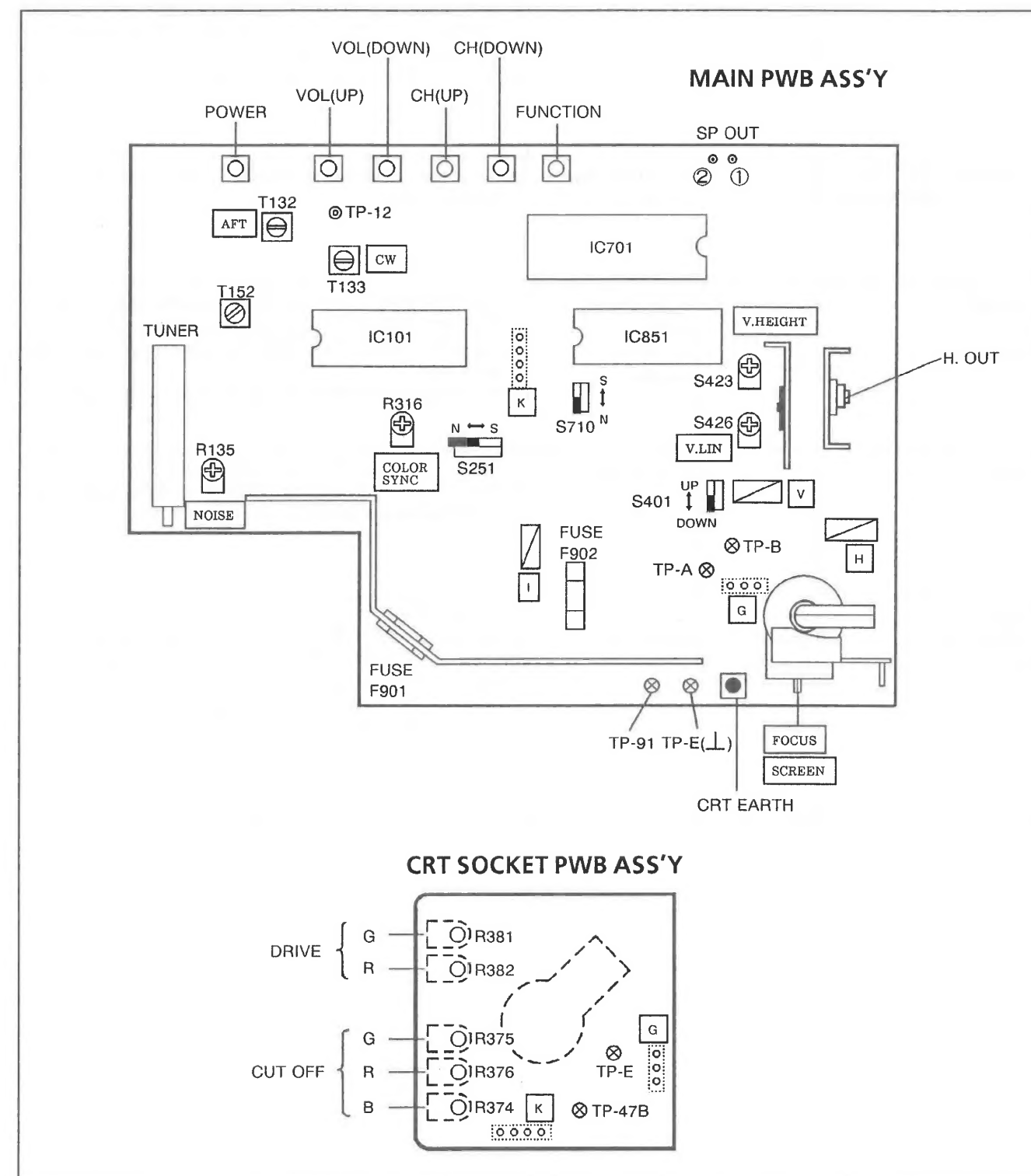
TOOLS AND FIXTURES FOR  
ADJUSTMENT

- DC VOLTMETER

## NOTE

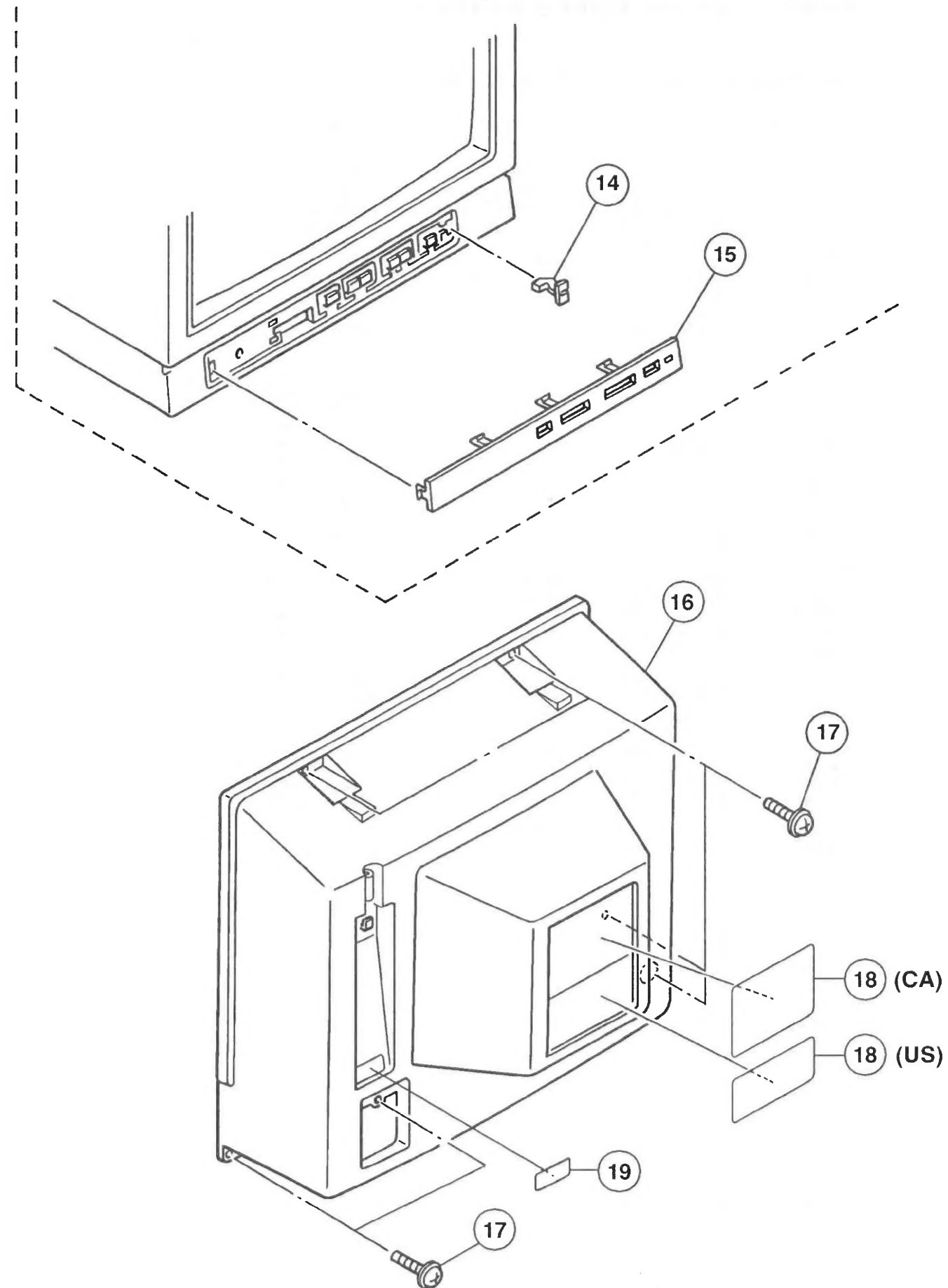
- Before commencing any adjustment, set the FUNCTION (BRIGHT, PICTURE, COLOR, etc. ) to the standard LEVEL by pressing the RESET button on the remote controller.

## ADJUSTMENT LOCATION



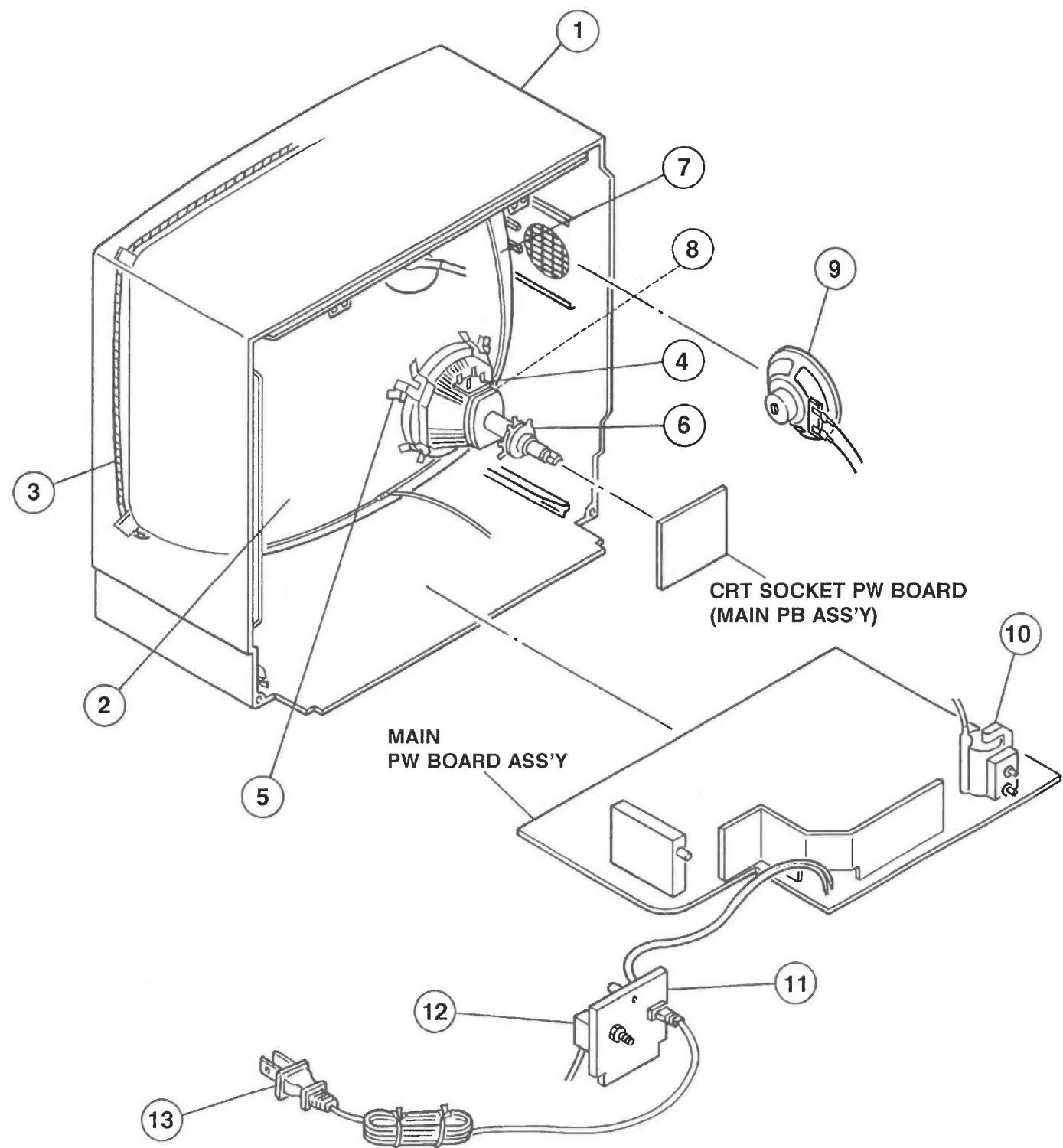
## ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
B1 POWER SUPPLY	DC Voltmeter	TP-91		Connect a tester to TP-91 and TP-E (⊥) to check that the voltage is DC 129.3V. * The tester must have an internal resistance of 20kΩ/V or above.
NOISE (RF AGC)			NOISE VR (R135)	1. Turn the NOISE VR so that noise appear in the picture. 2. Then adjust the NOISE VR in the direction where noise disappears from the picture, and stop it where noise has disappeared from the picture. 3. Select another channel, and make sure that there occurs no trouble.
V. CENTER	PATTERN GENERATOR		V. CENTER SW (S401)	• The screen can be shifted vertically by changing the V. CENTER switch.
V HEIGHT & V. LINEARITY			V HEIGHT VR (R423) V LIN. VR (R426)	1. Receive a picture that enable vertical symmetry to be checked. 2. Turn the V HEIGHT VR to compress the picture vertically. 3. Adjust the V LINE. VR to where the picture is symmetrical top and bottom. 4. Again adjust the V HEIGHT VR to return the normal height.
FOCUS			FOCUS VR	1. Adjust the FOCUS VR to obtain clear pictures. 2. Check that pictures have been adjusted to optimum appearance in both central and peripheral areas of the screen.
COLOR SYNCHRONIZATION		IC101 (Pin ④) (Pin ⑤)	COLOR SYNC VR (R316)	1. Receive the color bar signal. 2. Connect pin ⑤ and ④ (9V line) of IC101 with 100Ω resistor. 3. Adjust the COLOR SYNC. VR to change the picture from color stripes to still color bar. 4. Remove 100Ω resistor and check that the color synchronization does not deteriorate on any of the channels.





EXPLODED VIEW



Item	Measuring instrument	Test point	Adjustment part	Description
SUB BRIGHT	Remote control unit		VSM SERVICE SWITCH (S710)	<ol style="list-style-type: none"><li>By pressing AV STATUS / RESET button of the remote control unit, reset the respective functions (TINT, COLOR, PICTURE, BRIGHT, DETAIL)</li><li>Turn VSM SERVICE SW (S710) to the S side.</li><li>Select BR(BRIGHT) adjustment mode using FUNCTION KEY of the remote control unit and obtain an optimum brightness using the adjusting (+/-) key.</li><li>After adjustment , return VSM SERVICE SW (S710) to the N side.</li></ol> <ul style="list-style-type: none"><li>Avoid excessive brightness.</li></ul>
PICTURE	Remote control unit		VSM SERVICE SWITCH (S710)	<ol style="list-style-type: none"><li>By pressing AV STATUS / RESET button of the remote control unit, reset the respective functions (TINT, COLOR, PICTURE, BRIGHT, DETAIL)</li><li>Turn VSM SERVICE SW(S710) to the S side.</li><li>Select PI(PICTURE) adjustment mode using FUNCTION KEY of the remote control unit and obtain an optimum contrast using the adjusting (+/-) key.</li><li>After adjustment , return VSM SERVICE SW (S710) to the N side.</li></ol>
TINT &COLOR	Remote control unit		VSM SERVICE SWITCH (S710)	<ol style="list-style-type: none"><li>By pressing AV STATUS / RESET button of the remote control unit, reset the respective functions (TINT, COLOR, PICTURE, BRIGHT, DETAIL)</li><li>Turn VSM SERVICE SW (S710) to the S side.</li><li>Select the TINT and COLOR controls with the remote control unit function keys. Use the (+/-) keys to adjust for the most natural color.</li><li>After adjustment , return VSM SERVICE SW (S710) to the N side.</li></ol>
HORIZON-TAL LINE display			SERVICE SW (S251)	<ol style="list-style-type: none"><li>Turning the SERVICE SW from the N side to the S side will bring the horizontal line display to the screen.</li></ol> <div><div><div>N</div><div>S</div></div><div><div>N : normal picture</div><div>S : will appear a H line</div></div></div>

HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

1. HIGH VOLTAGE HOLD DOWN CIRCUIT

After repairing of the high voltage hold down circuit shown in Fig. 1.  
This circuit shall be checked to operate correctly.

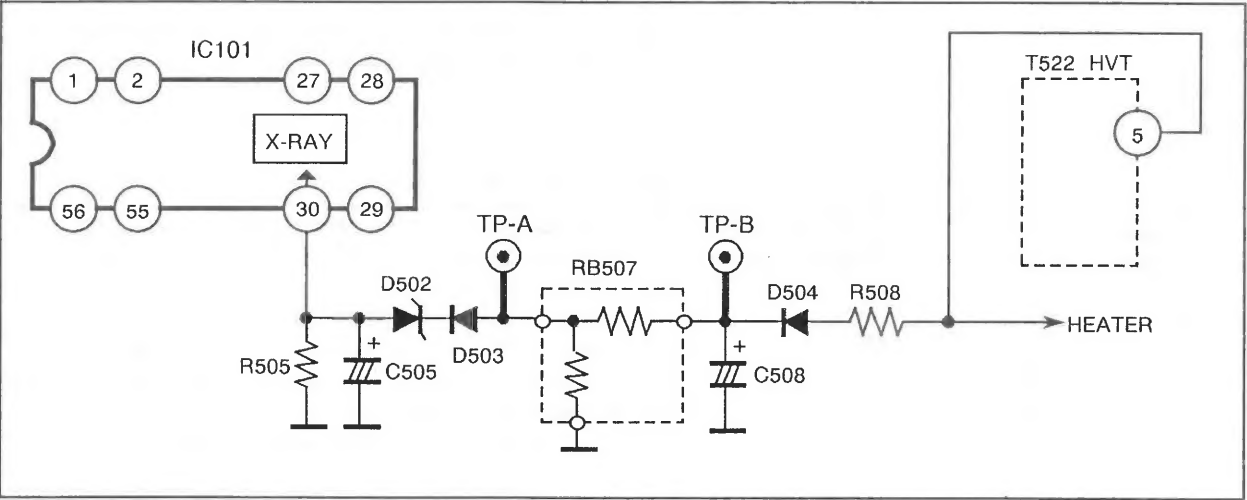


Fig. 1

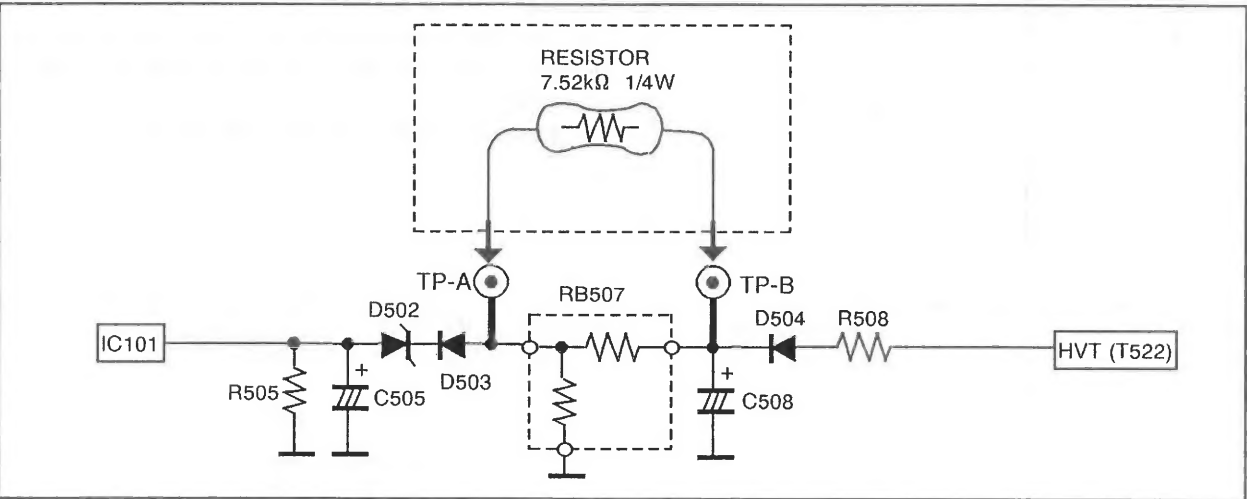


Fig. 2

2. CHECKING OF THE HIGH VOLTAGE HOLD DOWN CIRCUIT.

- (1) Make sure that the power SW is at OFF.
- (2) As shown in Fig. 2, set the resistor 7.52kΩ 1/4W (between TP-A and TP-B).
- (3) Turn the power SW ON.
- (4) Make sure that the screen picture disappears.
- (5) Turn the power SW OFF.
- (6) Remove the resistor 7.52kΩ 1/4W from RB507 (between TP-A and TP-B).

USING P.W. BOARD

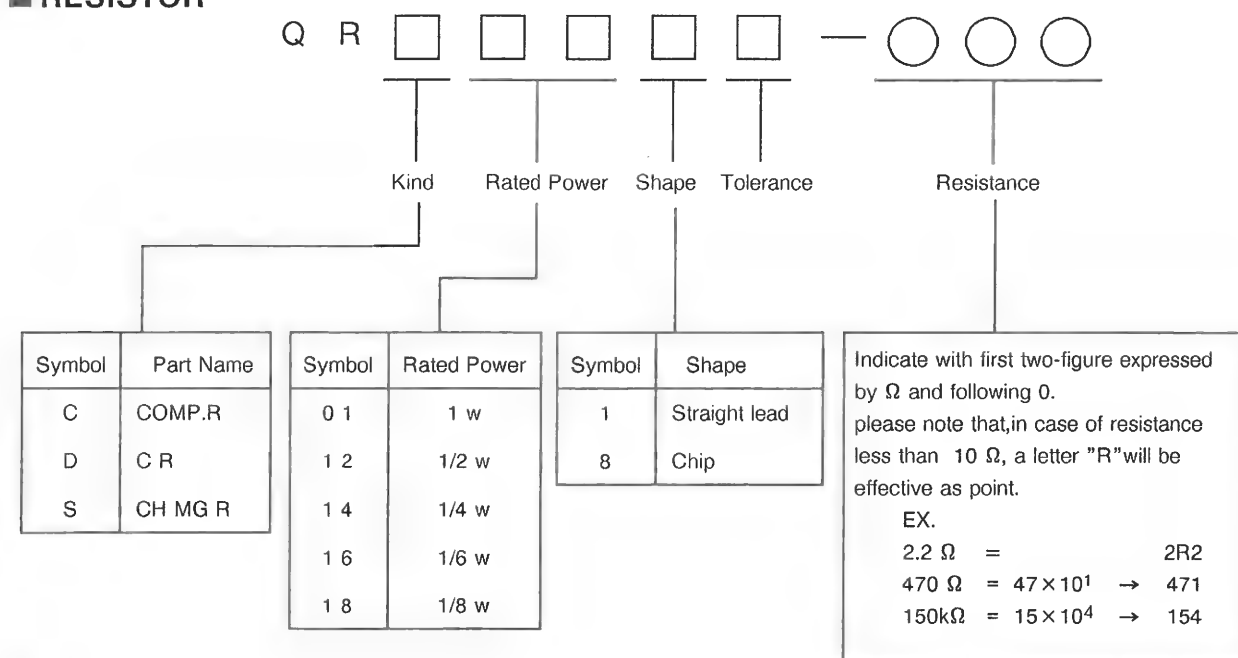
Model P.W.B. ASS'Y	America Models [US]	Canada Models [CA]
	C-13CL4 C-13WL4	C-13CL4 C-13WL4
MAIN P.W.B. ASS'Y	SGY1201A(H2)	SGY1701A(H2)

EXPLODED VIEW PARTS LIST

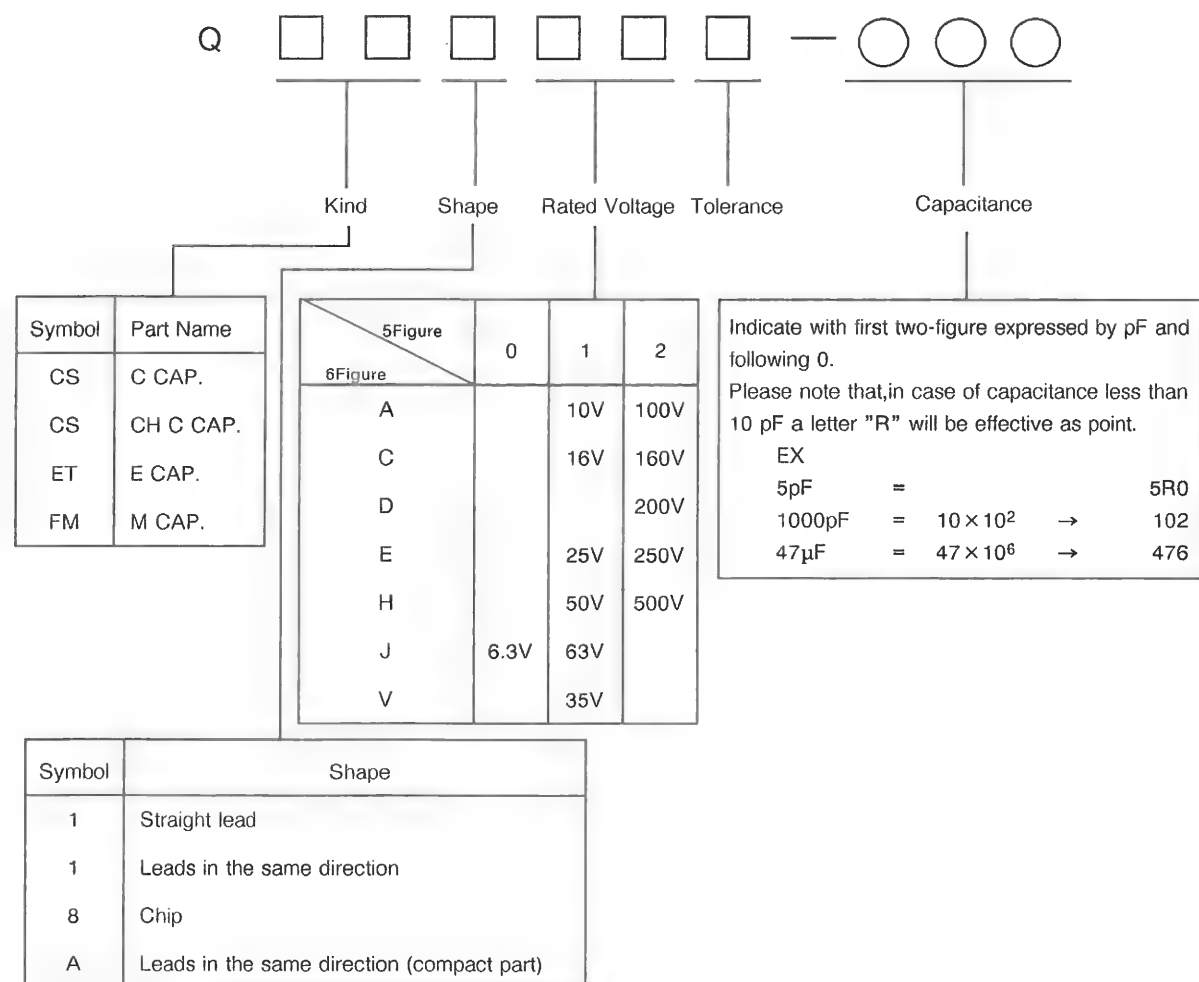
△ Ref.No.	Part No.	Part Name	Description	Local
1	CM11942-00G-MH	FRONT CABI ASSY	(C-13CL4)	
1	CM11942-A0D-MH	FRONT CABI ASSY	(C-13WL4)	
△ 2	A34JFQ90X(W)	PICTURE TUBE	V01	
△ 3	CELD042-001J6	DEG COIL	L01	
△ 4	CJ27572-00AJ1	DEF YOKE	DY01	
5	CE42153-00AJ1	WEDGE ASSY	(× 3)	
6	CE40305-00B	PC MAGNET		
7	CHGB0001-0D-FH	BRAIDED ASSY		
8	A48457-3-H	SPRING		
△ 9	CEBSN08P-01KJ3	SPEAKER	SP01	
△ 10	CJ27636-00BJ1	HV TRANSF.	T1522	
△ 11	CM33702-B03-VH	TERMINAL BASE	(C-13CL4)	
△ 11	CM33702-005-VH	TERMINAL BASE	(C-13WL4)	
△ 12	CE42385-150AJ1	ANT SHIELD BOX	(US)	
△ 12	CE41139-003	ANT SHIELD BOX	(CA)	
△ 13	QMP1490-170J5	POWER CORD	(C-13CL4)	
△ 13	QMP1499-170J5	POWER CORD	(C-13WL4)	
14	CM46700-B01	LED MIRROR		
15	CM22060-A01-V0	ORNAMENT PLATE	(C-13CL4)	
15	CM22060-003-V0	ORNAMENT PLATE	(C-13WL4)	
16	CM11944-001-MH	REAR COVER	(C-13CL4)	
16	CM11944-A03-MH	REAR COVER	(C-13WL4)	
17	GBSB4016Z-H	W TAP SCREW	(× 6)	
18	CM22557-001	RATING LABEL	(US)	
18	CM22558-001	RATING LABEL	(CA)	
19	CM47692-001-H	HYATT LABEL		

## ( NOTE 2 ) HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

## ■ RESISTOR



## ■ CAPACITOR



## PURITY, CONVERGENCE AND WHITE BALANCE

\* The locations of SERVICE SWITCH, SCREEN VR, CUT-OFF VR and DRIVE VR are described in the ALIGNMENT LOCATION of SERVICE ADJUSTMENT or the SCHEMATIC DIAGRAM.

## PICTURE TUBE

The picture tube is a precision in-line gun type. For this picture tube, dynamic convergence is carried out by a precision deflection yoke which eliminated the use of convergence yoke and convergence circuit. The adjustment of picture tube is therefore made easier as only the adjustment of static convergence by using a magnetic is enough. The deflection yoke and purity/convergency magnets assembly has been set at the factory and requires no field adjustments. However, should the assembly be accidentally jarred or tampered with, some or all adjustments may be necessary.

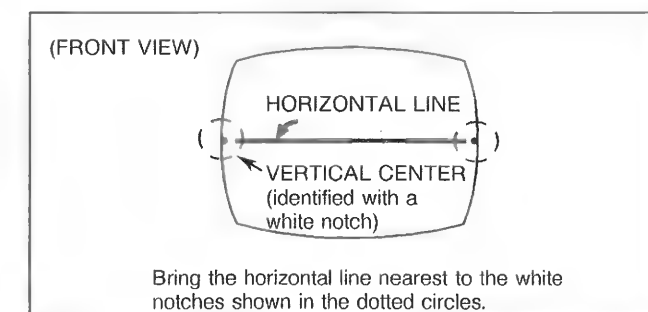
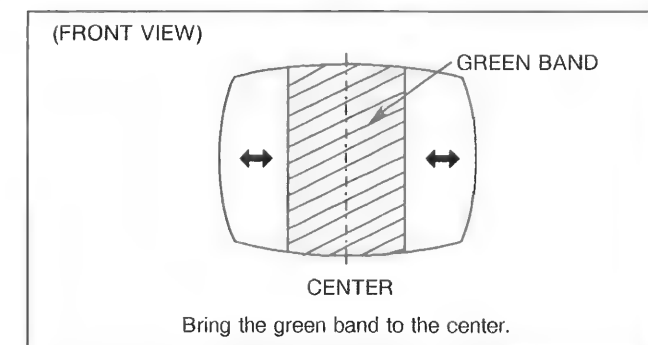
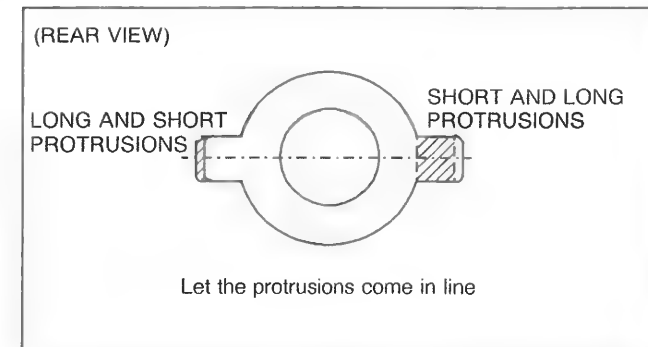
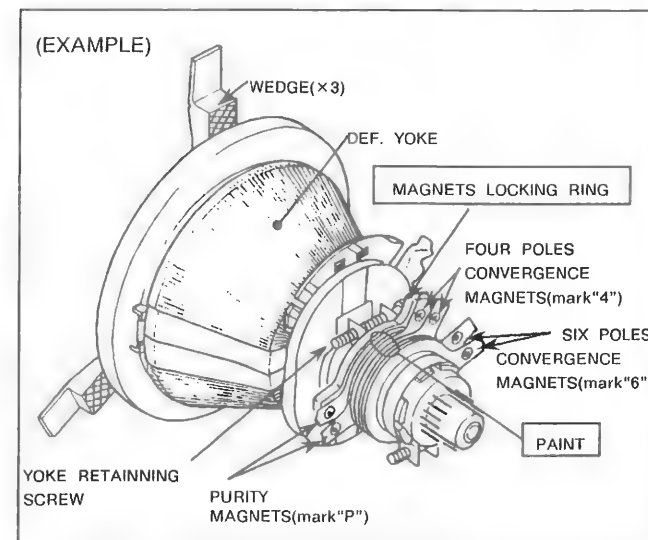
## COLOR PURITY &amp; VERTICAL CENTER

Loosen yoke retaining screw ( Fig. B-1 ) . With a sharp knife cut between the picture tube and the wedge. Remove wedges completely and clean off dried adhesive from the picture tube. PAINT is used to lock the tabs of the purity/convergence magnet assembly in place ( Fig. B-1 ) . The paint must be removed with the end of a screwdriver before any adjustments are attempted.

(As to models equipped with a magnet locking ring, beforehand loosen it. )

1. Select no signal UHF channel. ( or Display a monochrome pattern )
2. Let the purity tabs come in line horizontally as is shown in Fig. B-2. A long tab should be in the same direction as the other short tab.
3. Move the yoke slowly backward.
4. Turn the GREEN CUT-OFF VR to maximum and the RED and BLUE CUT-OFF VRs to minimum. Then adjust the SCREEN VR so that the green band can be seen best. (Fig. B-3 )
5. Rotate the two tabs in the opposite directions and with them kept at an angle, together in either direction so that the green band is centered on the picture tube.
6. Check the vertical center position by displaying a horizontal line. ( Select the CUT-OFF SERVICE SWITCH from N to S and a HORIZONTAL LINE will appear. ) Unless correct, bring it to the nearest center by rotating the two tabs, kept at an angle, together in either direction. ( Fig. B-4 )
7. Repeat steps 5 and 6 alternately until the green band and the vertical center come to the center.
8. Move the yoke slowly towards the bell of the tube so that the whole surface of the picture tube is filled with a green pure raster.
9. Turning RED or BLUE CUT-OFF VR to maximum and GREEN CUT-OFF VR to minimum, make sure of a red or blue pure raster.
10. Secure yoke retaining screw ( do not install wedges at this time ) .

(As to models equipped with a magnet locking ring, secure it and keep six magnets from moving even if it is touched slightly.)



STATIC CONVERGENCE & DYNAMIC CONVERGENCE

- 1. Connect a crosshatch generator to the input terminals and adjust BRIGHTNESS and CONTRAST control for a distinct pattern.
- 2. Adjust the convergence around the edges of the picture tube by tilting the yoke, up-down and left-right, and temporarily install one wedge at the top of the yoke. ( Fig. B-7, 8, 9 )
- 3. Rotate the front pair of tabs ( four pole convergence magnet ) as a unit to minimize the separation of the red and blue lines around the center of the screen. To adjust the convergence of red and blue, vary the angle between the tabs ( Fig. B-5 )
- 4. Rotate the rear pair of tabs ( six pole convergence magnets ) as a unit to minimize the separation of the magenta ( R/B ) and green lines. ( Fig. B-6 )
- 5. Adjust the spacing of the rear tabs to converge the magenta and green lines.
- 6. Apply paint to fix six magnets.  
( As to models equipped with a magnet locking ring, tighten it.)
- 7. Remove the wedge installed temporarily on the yoke.
- 8. Tilting the angle of the yoke up, down and sideways, and adjust the yoke so as to obtain the circumference convergence. (Fig. B-8, 9 )
- 9. Insert wedges to the position as shown in Fig. B-10 to obtain the best circumference convergence.
- 10. Wedge has a backing of double sided adhesive tape. Therefore, tear off one side of adhesive tape, and fix the wedges.
- 11. White balance adjustment ( Black & White tracking ) can now be performed.

WHITE BALANCE ADJUSTMENT  
( Black and White Tracking )

- 1. Display a monochrome pattern.
- 2. Set the RED and GREEN DRIVE VRs for their mechanical center.
- 3. Turn the RED, GREEN and BLUE CUT-OFF VRs and the SCREEN VR fully counterclockwise.
- 4. Display a horizontal line. ( Select the CUT-OFF SERVICE SWITCH from N to S and a HORIZONTAL LINE will appear.)
- 5. Turn SCREEN VR slowly clockwise until a very faint horizontal line appears.
- 6. Turn the CUT-OFF VR of the color which has appeared first, clockwise by about 10°and then adjust the SCREEN VR again so that the color may shine faintly.
- 7. Turn the other color CUT-OFF VRs slowly clockwise until a reasonable white line appears.
- 8. Return the monochrome pattern. ( When returning a monochrome pattern select the CUT-OFF SERVICE SWITCH from S to N and a monochrome pattern will appear. )
- 9. Adjust the RED and GREEN DRIVE VRs for best white highlights.

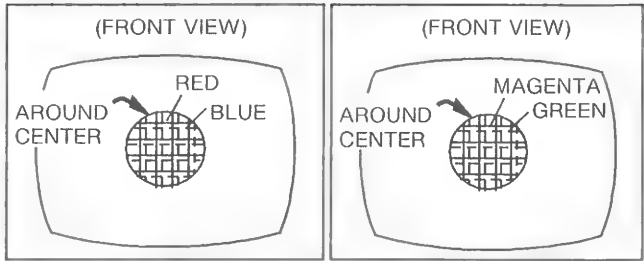


Fig.B-5

Fig.B-6

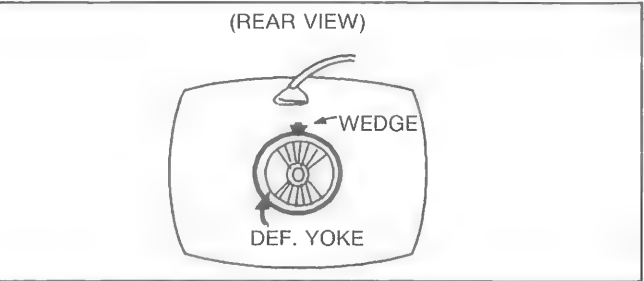


Fig.B-7

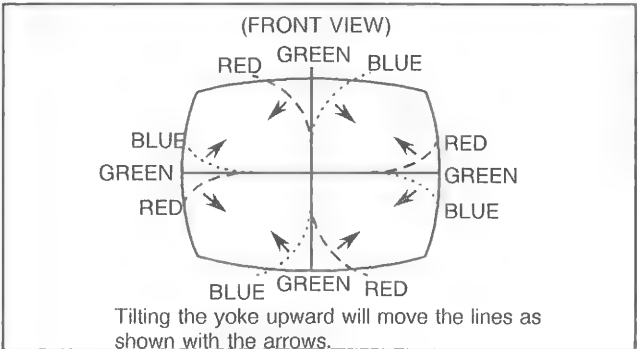


Fig.B-8

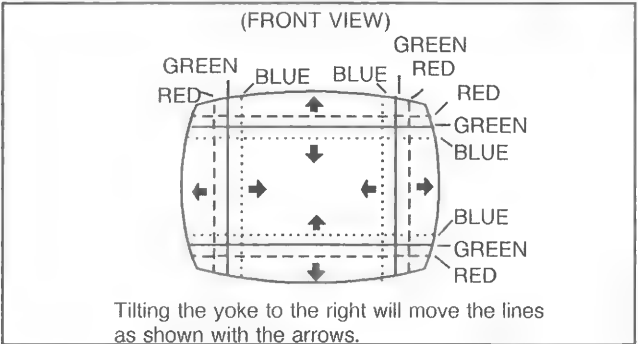


Fig.B-9

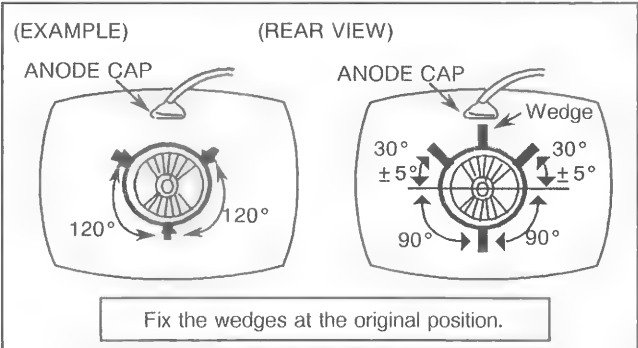


Fig.B-10

PARTS LIST

CAUTION

- The parts marked are very important for the safety. When replacing these parts, be sure to use specified ones to secure the safety and performance.
- The module circuit board is supplied together with the assembly, but the parts which do not have the drawing in this Parts List, P. W. Board Ass'y and the Parts No. columns of which are filled with lines — . will not be supplied.
- As a rule, the resistors and capacitors which are indicated as shown in (NOTE 2) "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" are not shown in the list of the parts on the board.  
When ordering the service parts, confirm the resistance/rated power, capacitance/rated voltage, and type of the parts, then order by the part No. indicated according to (NOTE 2).

( NOTE 1 ) ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
± 1%	± 2%	± 5%	± 10%	± 20%	± 30%	+ 30% - 10%	+ 50% - 10%	+ 80% - 20%	+ 100% - 0%



# C-13CL4/C-13WL4(US&CA) STANDARD CIRCUIT DIAGRAM

## ■NOTE ON USING CIRCUIT DIAGRAMS

### 1.SAFETY

The components identified by the ⚠ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

### 2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

- (1)Input signal

:Color bar signal
- (2)Setting positions  
of each knob/button  
and variable resistor

:Original setting position  
when shipped
- (3)Internal resistance of tester

:DC 20kΩ/V
- (4)Oscilloscope sweeping time

:H ⇒20μS/div  
:V ⇒5mS/div  
:Others ⇒ Sweeping time is  
specified
- (5)Voltage values

:All DC voltage values
- \* Since the voltage values of signal circuit vary to some extent  
according to adjustments, use them as reference values.

### 3.INDICATION OF PARTS SYMBOL[EXAMPLE]

- In the P.C.board

:R1209→R209

### 4.INDICATIONS ON THE CIRCUIT DIAGRAM

#### (1)Resistors

- Resistance value

No unit :[Ω]  
K :[KΩ]  
M :[MΩ]
- Rated allowable power

No indication :1/6[W]  
Others :As specified
- Type

No indication :Carbon resistor  
OMR :Oxide metal film resistor  
MFR :Metal film resistor  
MPR :Metal plate resistor  
UNFR :Uninflammable resistor  
FR :Fusible resistor
- \* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

#### (2)Capacitors

- Capacitance value

1or higher :[pF]  
less than 1 :[μF]
- Withstand voltage

No indication :DC50[V]  
Others :DC withstand voltage[V]  
AC indicated :AC withstand voltage[V]
- \* Electrolytic Capacitors

47/50[Example]:Capacitance value[μF]/withstand voltage[V]

- Type

No indication :Ceramic capacitor  
MY :Mylar capacitor  
MM :Metalized mylar capacitor  
PP :Polypropylene capacitor  
MPP :Metalized polypropylene capacitor  
MF :Metalized film capacitor  
TF :Thin film capacitor  
BP :Bipolar electrolytic capacitor  
TAN :Tantalum capacitor

#### (3)Coils

- No unit

:[μH]
- Others

:As specified

#### (4)Power Supply

- 

:B1(129.3V)
- 


:B2(12V)
- 


:9V
- 

:5V

\* Respective voltage values are indicated.


#### (5)Test Point


- 


: Test point
- 

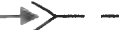
: Only test point display

#### (6)Connecting method

- 


: Connector
- 


: Board in connector
- 


: Wrapping or soldering
- 


: Receptacle

#### (7)Ground symbol

- 

: LIVE side ground
- 

: NEUTRAL side ground
- 

: EARTH ground
- 

: DIGITAL ground

### 5.NOTE FOR REPAIRING SERVICE

**USE ISOLATION TRANSFORMER BECAUSE THIS PRODUCT IS A HOT CHASSIS !**


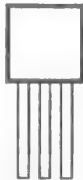
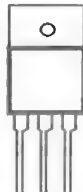
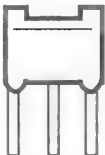
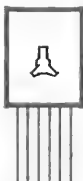

Whenever any service on this product is performed, AC power of the product should be supplied through an adequate capacity isolation transformer whose power supply cord is connected to the wall outlet.

If the above precaution is not respected, an electric shock may be caused when you touched the chassis with the hand.


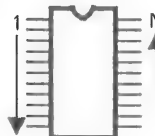
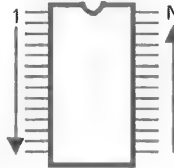
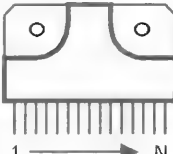
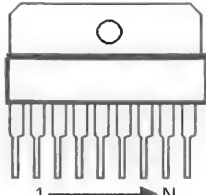
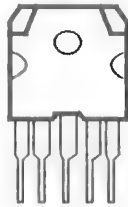
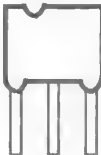
◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

### SEMICONDUCTOR SHAPES (\* = Bottom view)

## TRANSISTORS

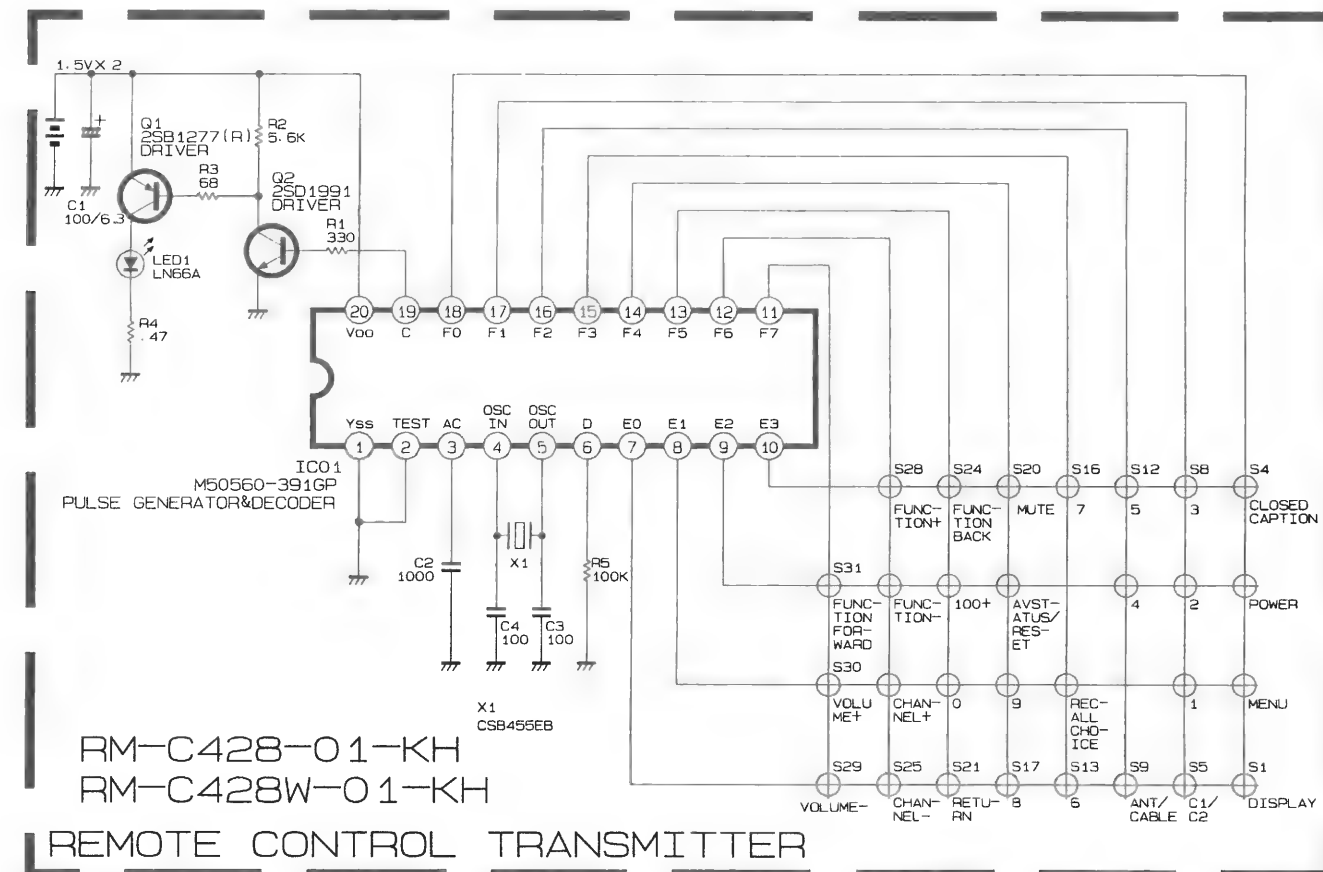
 <p>* E C B</p> <p>2SC2655(Y) 2SC1360 2SC1959 2SC1906 2SC2482(C1) 2SB774(RS)</p>	 <p>E C B</p> <p>2SA933S(QR) 2SC1740S(QR) 2SC2785(JH)</p>	 <p>(B)(C)(E)</p> <p>2SD1554-C1</p>
 <p>E C B</p> <p>2SC4502</p>	 <p>E C B</p> <p>2SC3271(NP)</p>	 <p>B C E</p> <p>2SC2073</p>

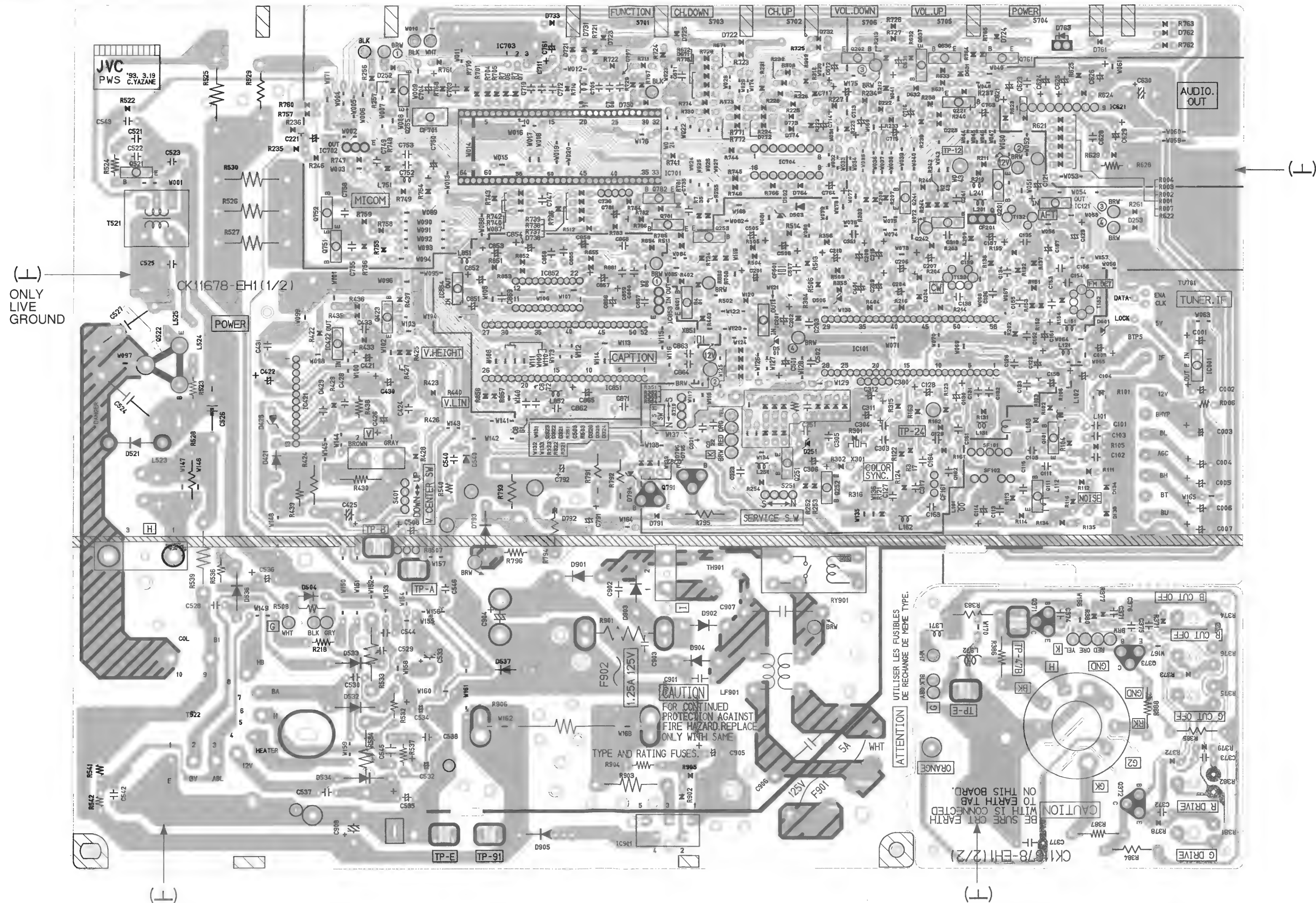
**ICs**

 <p>           * OUT E IN         </p> <p>           TA78L005AP            TA78L009AP            TA78L012AP            AN78L05            AN78L09            AN78L12         </p>	 <p>           1 N         </p> <p>           TA7630P            M51496P            AN5352N            MN12C201D            MN12C261D         </p>	 <p>           1 N         </p> <p>           TA8725N-J            TA8601BNV            MN152121JGM2            CXA1124AS            TA8725AN            MN1872013JGU3         </p>
 <p>           1 N         </p> <p>           LA7838            UPC1488H         </p>	 <p>           1 N         </p> <p>AN5265</p>	 <p>           1 N         </p> <p>STR30130</p>
 <p>           Vss Voo OUT         </p> <p>           MN1280-K            MN1280-Q         </p>		

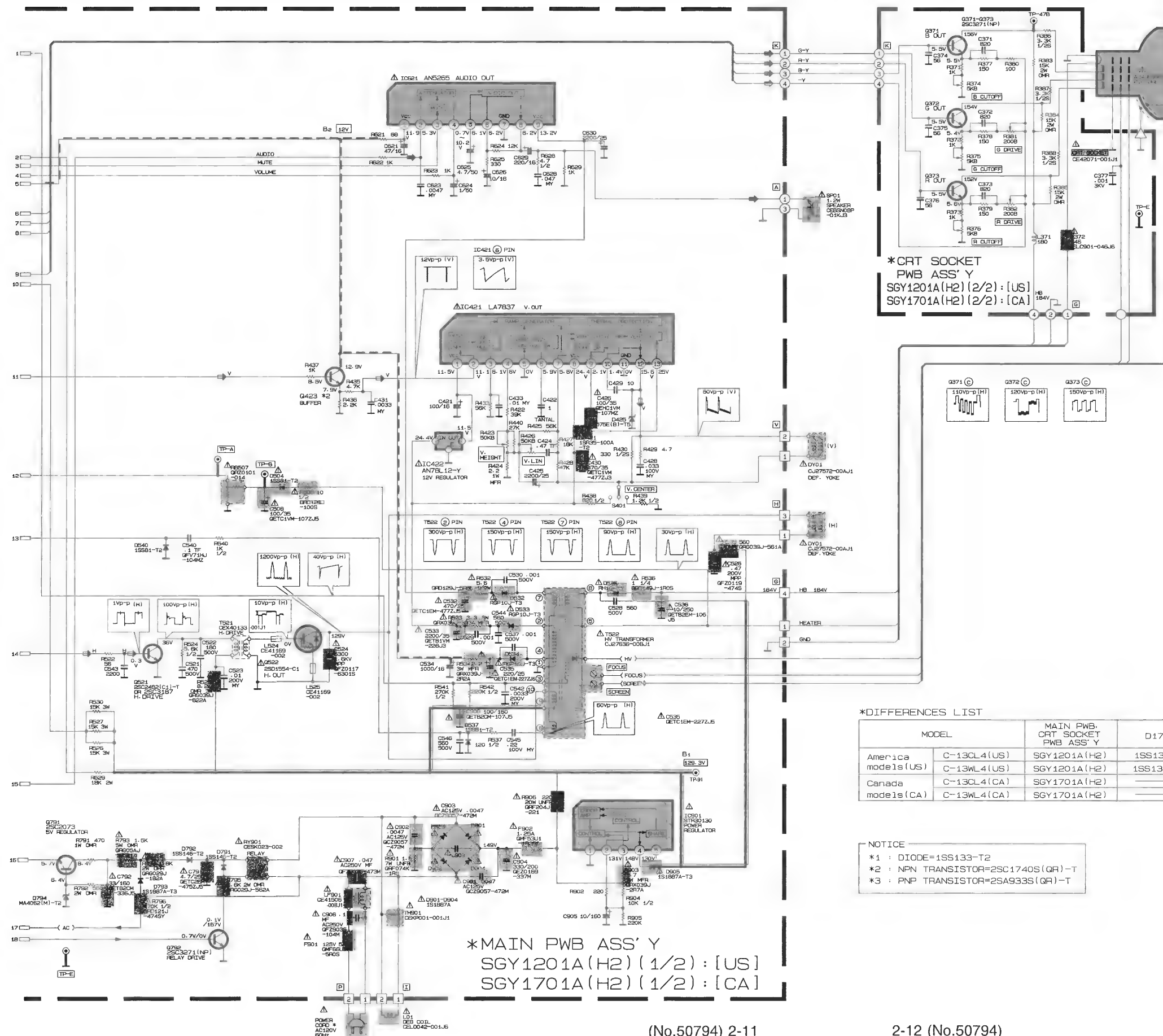
### REMOTE CONTROL TRANSMITTER CIRCUIT DIAGRAM

[RM-C428-01-KH/RM-C428W-01-KH]





Refer to the following PW Board pattern. : MAIN PWB PATTERN 2-13page, CRT SOCKET PWB PATTERN 2-13page.



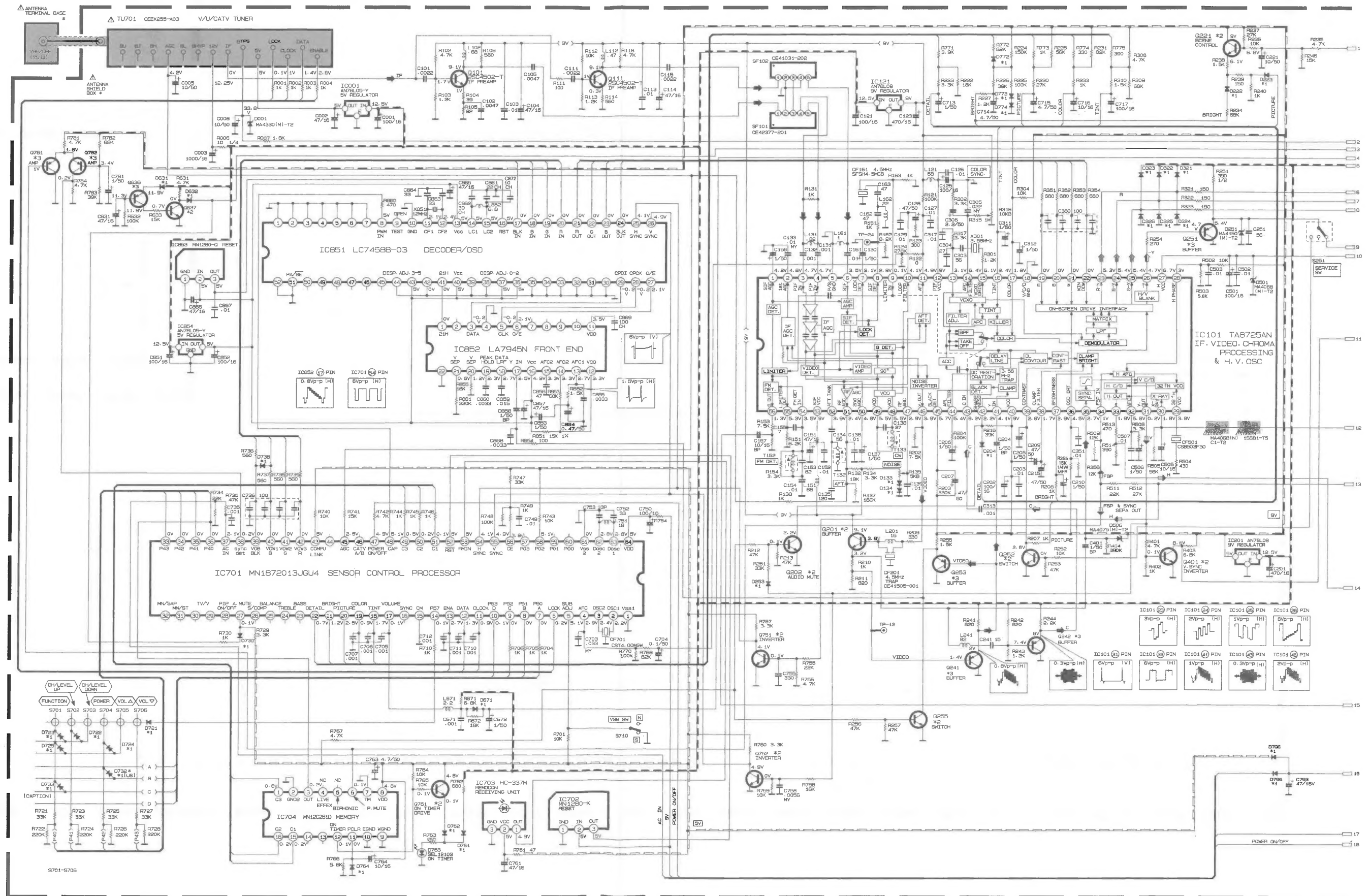


# CIRCUIT DIAGRAMS AND PWB PATTERNS

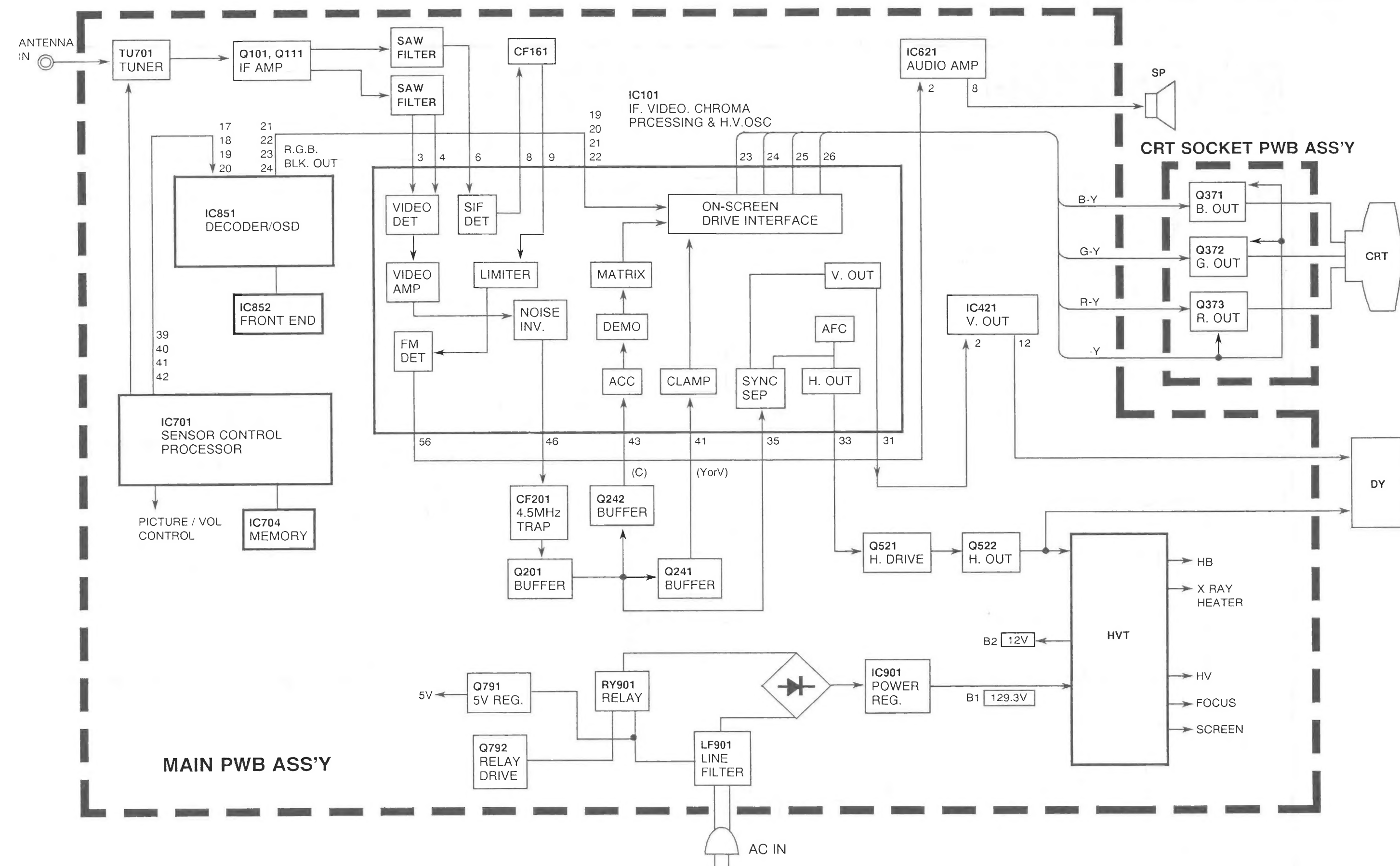
## MAIN PWB, CRT SOCKET PWB CIRCUIT DIAGRAMS

This schematic diagram applies to both (US) and (CA) models.

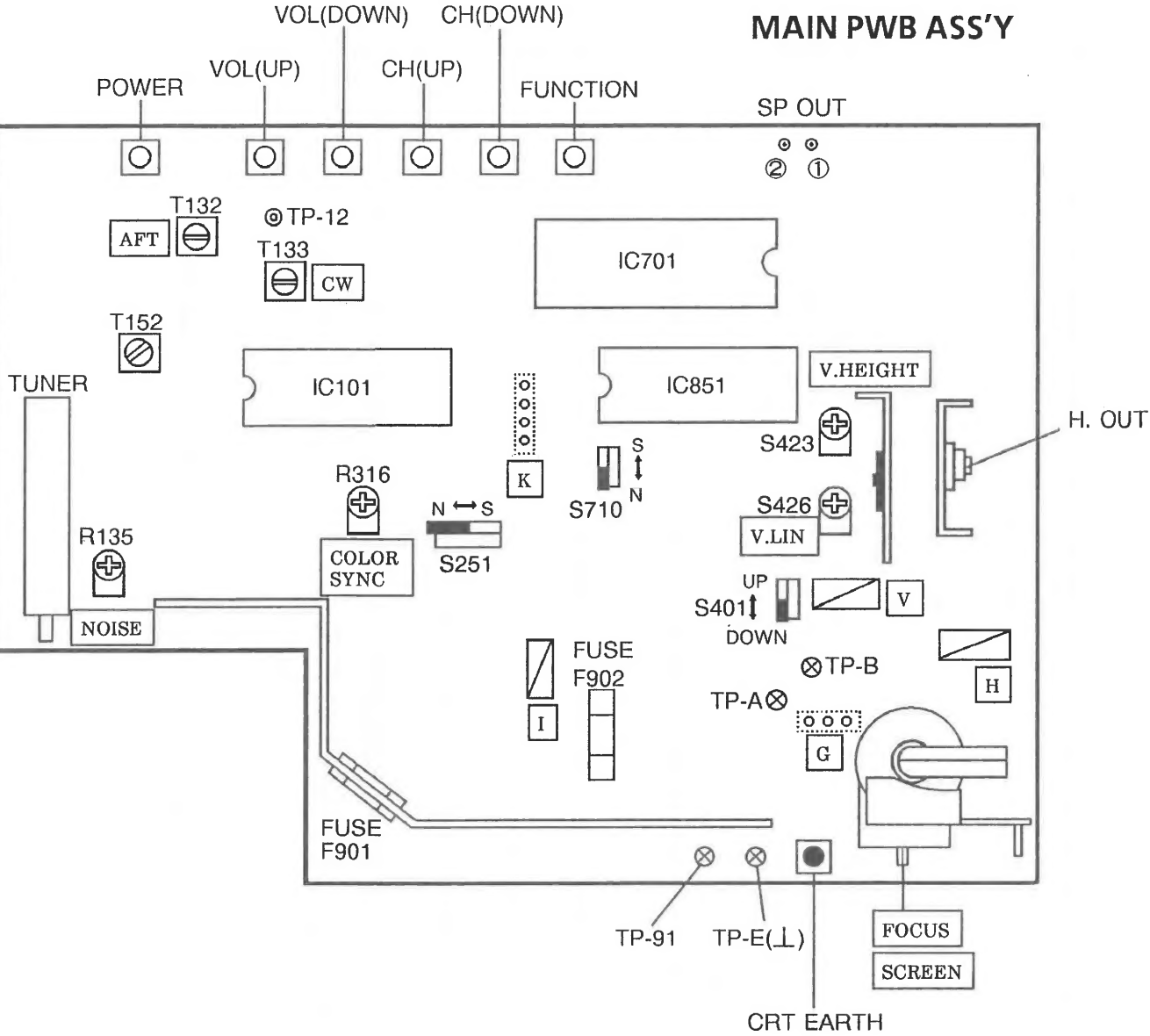
Refer to the Difference List in the diagram regarding the differing points between the models.



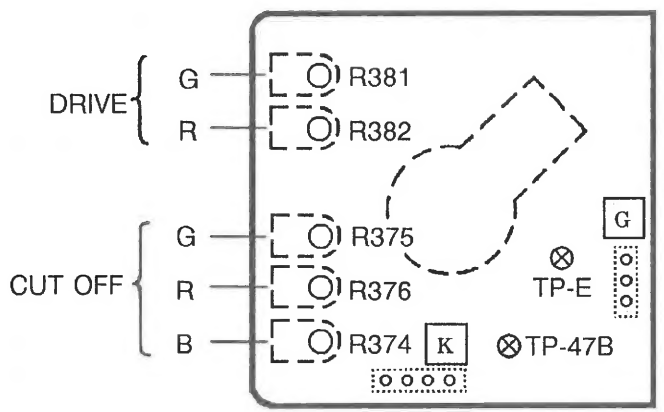
# BLOCK DIAGRAM



MAIN PARTS LOCATION AND ALIGNMENT LOCATION



CRT SOCKET PWB ASS'Y



WIRING LIST

P.W.B or PART NAME	CONNECTOR NAME	WIRING	CONNECTOR NAME	P.W.B or PART NAME
MAIN PWB ASS'Y	G	↔	G	CRT SOCKET PWB ASS'Y
MAIN PWB ASS'Y	K	↔	K	CRT SOCKET PWB ASS'Y
MAIN PWB ASS'Y	I	↔	WIRE	DEG. COIL
MAIN PWB ASS'Y	H	↔	WIRE	DEF. YOKE
MAIN PWB ASS'Y	V	↔	WIRE	DEF. YOKE
MAIN PWB ASS'Y	A	↔	WIRE	SPEAKER
MAIN PWB ASS'Y	P	↔	—	POWER CORD
CRT SOCKET PWB ASS'Y	CRT EARTH	↔	EARTH WIRE	CRT
MAIN PWB ASS'Y	CRT EARTH	↔	EARTH WIRE	CRT

CHANNEL CHART(US)

MODE		BAND	CHANNEL		TUNER BAND
TV	CATV		REAL	DISP.	
○	○	VL	02		I
			03		
			04		
			05		
			06		
			07		
		VH	08		II
			09		
			10		
			11		
			12		
			13		
X	○	MID	A	14	I
			B	15	
			C	16	
			D	17	
			E	18	
			F	19	
			G	20	
			H	21	
			I	22	
		SUPER	J	23	II
			K	24	
			L	25	
			M	26	
			N	27	
			O	28	
			P	29	
			Q	30	
			R	31	
			S	32	
			T	33	
			U	34	
			V	35	
			W	36	
		HYPER	W+1	37	IV
			W+2	38	
			W+3	39	
			W+4	40	
			W+5	41	
			W+6	42	
			W+7	43	
			W+8	44	
			W+9	45	
			W+10	46	
			W+11	47	
			W+12	48	
		SUB MID	W+13	49	I
			W+14	50	
			W+15	51	
			W+16	52	
			W+17	53	
			W+18	54	
			W+19	55	
			W+20	56	
○	X	ULTRA	W+21	57	IV
			W+22	58	
			W+23	59	
			W+24	60	
			W+25	61	
			W+26	62	
			W+27	63	
			W+28	64	
			W+29	65	
			W+30	66	
			W+31	67	
			W+32	68	
			W+33	69	
			W+34	70	
			W+35	71	

MODE		BAND	CHANNEL		TUNER BAND
TV	CATV		REAL	DISP.	
X	○	ULTRA	W+35	71	IV
			W+36	72	
			W+37	73	
			W+38	74	
			W+39	75	
			W+40	76	
			W+41	77	
			W+42	78	
			W+43	79	
			W+44	80	
			W+45	81	
			W+46	82	
			W+47	83	
			W+48	84	
			W+49	85	
			W+50	86	
			W+51	87	
			W+52	88	
			W+53	89	
			W+54	90	
			W+55	91	
			W+56	92	
			W+57	93	
			W+58	94	
			W+59	100	
			W+60	101	
			W+61	102	
			W+62	103	
			W+63	104	
			W+64	105	
			W+65	106	
			W+66	107	
			W+67	108	
			W+68	109	
			W+69	110	
			W+70	111	
			W+71	112	
			W+72	113	
			W+73	114	
			W+74	115	
			W+75	116	
			W+76	117	
			W+77	118	
			W+78	119	
			W+79	120	
			W+80	121	
			W+81	122	
			W+82	123	
			W+83	124	
			W+84	125	
		SUB MID	A-8	01	I
			A-4	96	
			A-3	97	
			A-2	98	
			A-1	99	
○	X	UHF	14	§	IV
TOTAL 180CH { VHF 124CH UHF 56CH					
NOTE; TO RECEIVE THE SUBSCRIPTION OR PREMIUM PROGRAMMING FROM CERTAIN CABLE COMPANIES. SPECIAL ADAPTERS MAY BE REQUIRED.					

CHANNEL CHART(CA)

MODE		BAND	CHANNEL		TUNER BAND
TV	CATV		REAL	DISP.	
○	○	VL	02		I
			03		
			04		
			05		
			06		
			07		
		VH	08		II
			09		
			10		
			11		
			12		
			13		
X	○	MID	A	14	II
			B	15	
			C	16	
			D	17	
			E	18	
			F	19	
			G	20	
			H	21	
			I	22	
		SUPER	J	23	III
			K	24	
			L	25	
			M	26	
			N	27	
			O	28	
			P	29	
			Q	30	
			R	31	
			S	32	
			T	33	
			U	34	
			V	35	
			W	36	
		HYPER	W+1	37	IV
			W+2	38	
			W+3	39	
			W+4	40	
			W+5	41	
			W+6	42	
			W+7	43	
			W+8	44	
			W+9	45	
			W+10	46	
			W+11	47	
			W+12	48	
		SUB MID	W+13	49	I
			W+14	50	
			W+15	51	
			W+16	52	
			W+17	53	
			W+18	54	
			W+19	55	
			W+20	56	
○	X	ULTRA	W+21	57	IV
			W+22	58	
			W+23	59	
			W+24	60	
			W+25	61	
			W+26	62	
			W+27	63	
			W+28	64	
			W+29	65	
			W+30	66	
			W+31	67	
			W+32	68	
			W+33	69	
			W+34	70	
			W+35	71	

MODE		BAND	CHANNEL		TUNER BAND
TV	CATV		REAL	DISP.	
○	○	VL	W+35	71	I
			W+36	72	
			W+37	73	
			W+38	74	
			W+39	75	
			W+40	76	
		VH	W+41	77	II
			W+42	78	
			W+43	79	
			W+44	80	
			W+45	81	
			W+46	82	
X	○	MID	W+47	83	II
			W+48	84	
			W+49	85	
			W+50	86	
			W+51	87	
			W+52	88	
			W+53	89	
			W+54	90	